A Naval Safety Center Publication

approach

DECEMBER 1971 THE NAVAL AVIATION SAFETY REVIEW

THE DEPUTY CHIEF OF NAVAL OPERATIONS (AIR)

WASHINGTON

A New Approach

Improving naval aviation safety is one of my principal concerns. I consider a further reduction in aircraft accidents to be absolutely mandatory from the standpoint of readiness.

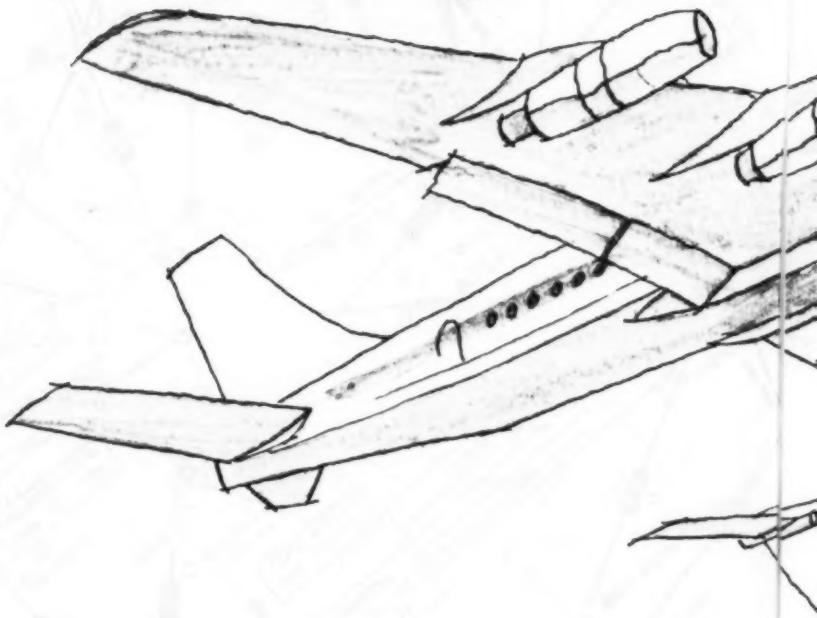
In spite of the praiseworthy improvement in the accident rate over the last decade, including the notable reduction in the last fiscal year, the rising cost of aircraft and their repair dictates the need for even more improvement. When the cost of new aircraft such as the F-14 and S-3 – plus the cost of such programs as LAMPS and *Harrier* – are considered, it is evident that we have no alternative; we *must* reduce aircraft accidents even further, and do it quickly, or face a substantial loss of readiness.

To determine the steps which must be taken to further reduce the accident rate, I have asked that all facets of the present aviation safety program be studied in depth to identify areas which can be strengthened or approached from a fresh point of view.

The success of any program to reduce accidents depends, ultimately, upon the support of each individual officer and man involved in the operation, maintenance and support of aircraft operations. Your involvement in this effort must be total if we are to succeed. I am counting upon each of you to recognize the need and support the program fully with genuine interest and concern for its success. Only in this way can we prevent the loss of assets vital to the defense of our country.

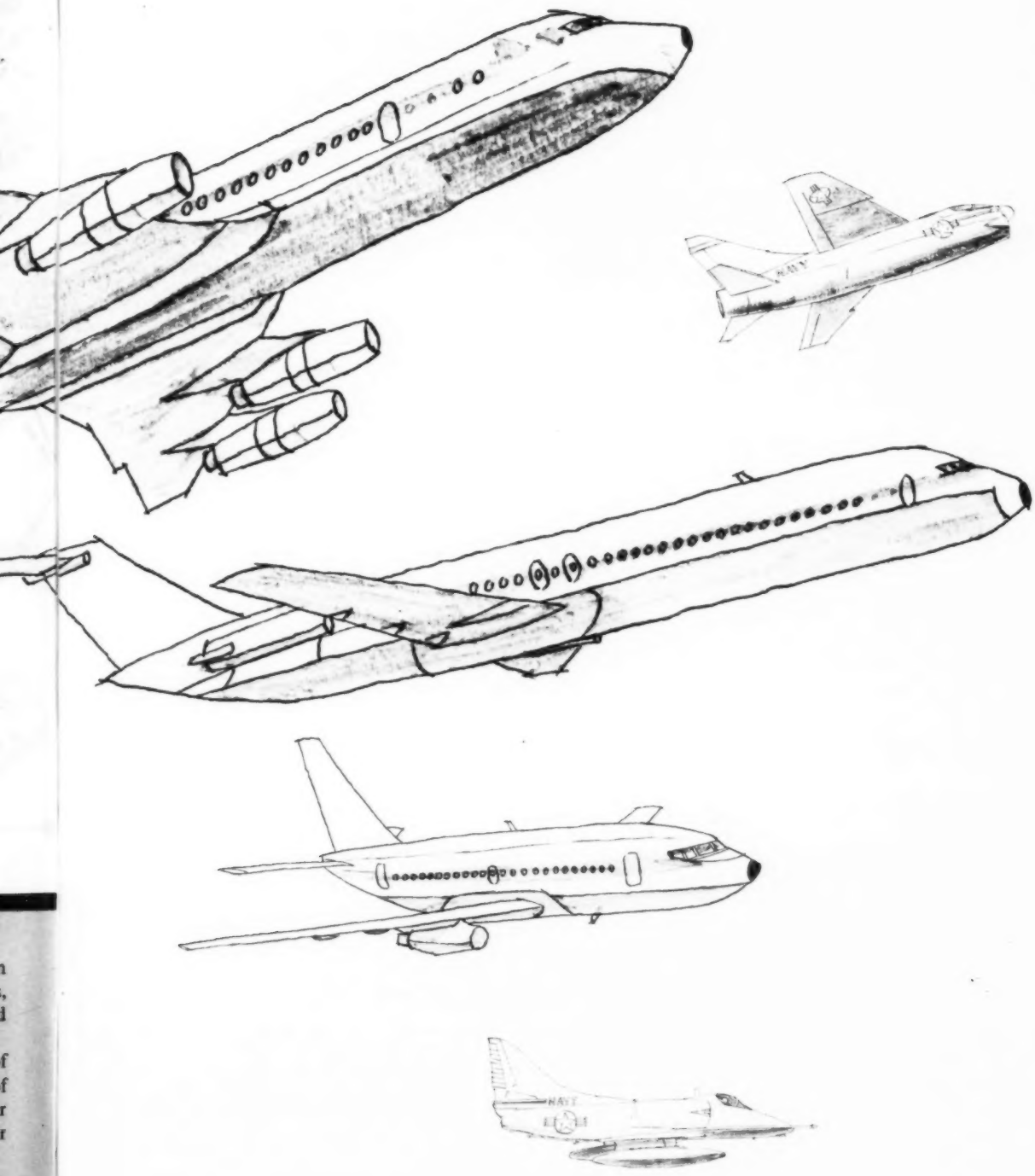
M. F. WEISNER
Vice Admiral, United States Navy

Sharing the Airways



IN recent years air traffic in the United States has grown by leaps and bounds, exceeding the expectations of just about everyone. Furthermore, there are widespread and well-founded predictions that air traffic will double – even triple – during the next decade. Whether these predictions will be borne out by time remains to be seen. Regardless, there are tens of thousands of airplanes presently operating in the United States. According to the FAA, there are more than 167,000 aircraft of all types in the United States, including 3000 air carrier, 130,000 general aviation and 34,000 military aircraft.

The primary problem, which such a vast number of aircraft operating in a limited airspace poses, is one of safe separation in flight. This is the basis for our air traffic control system. However, the mission of air



traffic control, in its broadest sense, is concerned not only with safety of flight but also with promoting the *expeditious* movement of air traffic. Therefore, historically, air traffic control procedures have been instituted only when there was a well-defined need. The first such need is said to have occurred in 1935 when an air traffic control facility (center) was opened at the Newark, N.J. airport for the control of enroute traffic. Since this beginning, the air traffic control system has grown to the point where it is concerned with the entire spectrum of flight operations, from the time an aircraft leaves the ramp at the point of departure until it reaches the ramp at destination.

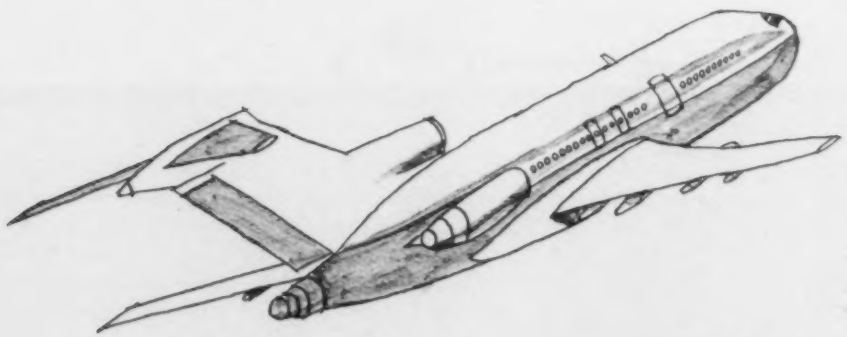
This is not the same as saying that all air traffic is controlled all the time. True, all air traffic is *regulated* by Federal Aviation Regulations but not in the sense of being controlled by the assignment of specific altitudes and routes. The fact is, except for airport traffic control at the point of takeoff and landing, the majority of all air traffic in the United States operates uncontrolled. First of all, we have both controlled and uncontrolled airspace. In uncontrolled airspace, both VFR and IFR traffic are free to operate uncontrolled. Then, we have controlled airspace. Here . . . in spite of the designation as controlled airspace . . . we generally have a mix of controlled and uncontrolled traffic, with uncontrolled traffic predominating. To elaborate, in some controlled airspace, such as the PCA (positive control area) all aircraft must be under positive control at all times. That is, they must abide by instrument flight rules, regardless of weather. Under these conditions, ATC can effectively provide separation between aircraft. However, in most of the controlled airspace which underlies the PCA, aircraft have the option of operating uncontrolled whenever the weather meets or exceeds VFR minimums. Under these conditions, ATC can effectively provide separation only between those aircraft which are controlled. It is limited in the separation it can provide between controlled and uncontrolled aircraft. It cannot legally demand separation between uncontrolled aircraft. The result is, the individual pilot is responsible for maintaining separation from other aircraft by visual means at all times, whether filed VFR or IFR, with one exception. This exception is when the pilot is on an IFR flight plan and is operating in instrument meteorological conditions which prevent him from visually sighting other aircraft.

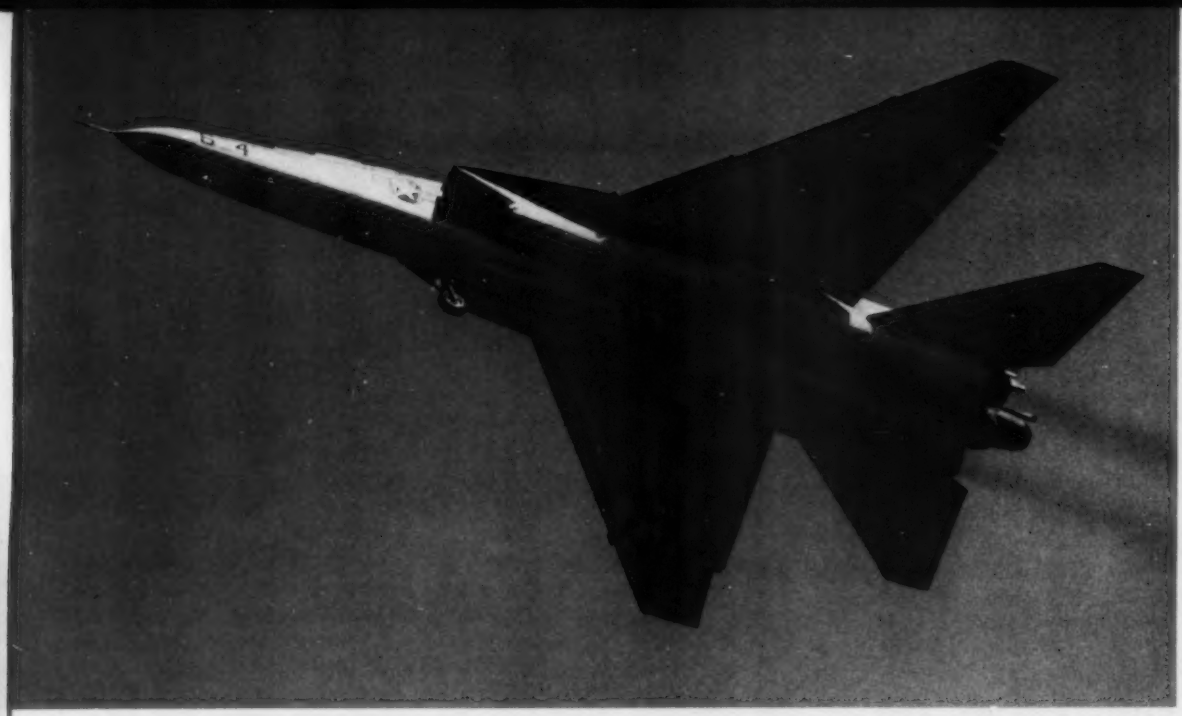
During early years of aviation development, this was entirely feasible. In recent years, however, it has been touch-and-go as aircraft have increased both in number and speed. Today, we not only have many more aircraft, we have aircraft closing speeds of 1000 knots – and up. Thus, in far too many cases, it is exceedingly difficult for pilots to maintain separation by visual means. This has led to an increasing number of near misses and an occasional disastrous midair collision.

The increasing potential for midair collisions has led to a number of developments in air traffic control during recent years. These include the establishment of PCA, increased use of ground radar, VFR advisory service, speed limits, and terminal control areas to name a few. These measures have helped but have not completely solved the problem. More effective means of midair collision avoidance is indicated.

A number of collision avoidance systems are under development and being tested, as well as a wide variety of proximity warning devices. However, for a number of reasons, it does not seem likely that the nation's fleet of aircraft will be fully equipped with any fully effective system for a number of years to come.

It is against this background that the Chief of Naval Operations, in a series of messages in early 1971, directed that all naval fixed-wing flight operations be conducted under instrument flight rules to the





maximum extent practicable.

Subordinate commanders, in executing the CNO directives, have elaborated on the measures to be taken. COMNAVAIRPAC, for example, issued a message in July 1971, which states in part:

"The VFR philosophy in naval aviation has been overtaken by events. No longer can we lean on the crutches of operational necessity, pilot's prerogative, flexibility and custom. Implementation of positive control* of naval aircraft is long overdue and deemed essential to aviation safety." This message went on to provide more specific guidance, including the following:

- Positive control (for the intent of the message) means operation within the ATC system in one or more of the following methods:
  (1) PCA (positive control area).
  (2) IFR (instrument flight rules).
  (3) Radar control.
  (4) Tower control in airport traffic areas.
  (5) Within special use or other defined airspace.
- All cross-country, round-robin, administrative, logistic, proficiency, test, and instrument training flights shall be flown under positive control procedures, including departures and approaches where published. These procedures may be filed by DD-175, stereotyped flight plans, flight schedules, tower-to-tower, or voice (in flight).

Realizing the difficulty of placing some types of naval flight operations under air traffic control, COMNAVAIRPAC directed air wings and NAS COs to continue discussions with FAA to establish procedures, airspace and routes in order to accommodate the majority of fleet air operations under air traffic control. Fleet air wings were directed to designate selected squadrons to plan and fly specific tactical flights under air traffic control, to include:

(1) Low level, high-speed training.
(2) Photo missions.
(3) Familiarization.
(4) ACM (air combat maneuvering).
(5) Air-to-air gunnery.
(6) Air-to-ground deliveries.
(7) ECM (electronic countermeasures).
(8) ASW operations.

Although this COMNAVAIRPAC message was addressed to NAVAIRPAC activities, other major aviation commands have issued comparable directives to their forces. The result is that as of this time, the majority of naval aviation flight operations are being conducted under air traffic control.

Air Traffic Control

So far, we have discussed air traffic control primarily in terms of safe separation of air traffic, but the expeditious movement of air traffic is also important. Economy and convenience are both involved, but the expeditious movement of aircraft also has safety

*Note: To avoid possible confusion about the term "positive control," it is noted that, officially, FAA uses the term only in connection with operations where *all* traffic is controlled, i.e., the PCA.

implications, particularly in the case of many military aircraft with limited fuel endurance.

Unfortunately, the rapid expansion of air traffic in recent years has placed such a load on the air traffic control system that there have been delays, particularly in high density traffic areas. This has provided the impetus for an overhaul and expansion of the air traffic control system which is now taking place.

This expansion has included the addition of many new controllers. However, increasing air traffic is not a problem which can be solved simply by adding x number of controllers for each increase of x number of aircraft. For one thing, the more controllers employed the more control sectors which must be established, and the greater becomes the problem of coordination between sectors.

The current overhaul of the air traffic control system under the National Airways System Plan is slanted heavily toward giving each controller greater capability rather than continuing to increase the number of controllers. That is to say, the ATC system is being rapidly automated. Already, the majority of air route traffic control centers have operational computer systems which will be tied into a national network by 1972 to provide automated data processing of flight plans on a national basis. In addition, improved radar tracking systems are rapidly being introduced, particularly in terminal areas.

The Individual Naval Aviator

With the increase in air traffic in the United States and the placement of most naval aviation flight operations under air traffic control, it is increasingly important for every naval aviator to understand the system and do his utmost to contribute to the safe and expeditious flow of traffic. Some of the ways by which pilots and aircrew may assist are:

- *Study the air traffic control system.* Learn the rules, regulations and procedures which govern flight. It may be neither necessary nor feasible to have a complete and detailed understanding of all ramifications of the air traffic control system but, as a minimum, individual aviators should strive to become really knowledgeable of Federal Aviation Regulations and the material contained in FLIP publications, as it pertains to their own operations.

- *Visit a control tower or other air traffic control facility whenever the opportunity presents itself.* In this way, the naval aviator can get a firsthand view of the controller's problems and will be better equipped to cooperate with the controller in promoting a safe and expeditious flow of traffic.

- *Recognize that the complexity of air traffic control, now and in the years to come, places a premium on flight planning.* With increasing automation of the ATC system, there will be even greater necessity for accuracy in estimating and making good departure time, time enroute, airspeed, etc. Furthermore, unnecessary inflight adjustments, changes of flight plan, etc., will only add to the communications workload which has already been identified as one of the limiting factors in the safe and expeditious flow of traffic.

- *Maintain and operate airborne equipment properly.* Increasing emphasis is being placed on airborne equipment as an aid to air traffic control. This equipment, commonly referred to as CNI (communication, navigation and identification) equipment plays a vital role in the safe and expeditious flow of traffic. It will become increasingly important as automation of the air traffic control system progresses. With all such equipment in good working order, flights can be processed efficiently with the controller making use of an array of automated equipment. Without CNI equipment in good working order, the controller is often reduced to processing the flight manually which contributes to a slowdown in the movement of air traffic. Furthermore, it is detrimental to safety of flight. For example, it may be impossible for a controller to accurately track an aircraft with an inoperative radar beacon.

- *Promote efficiency in communication.* Know clearance shorthand and practice it until you can copy clearances rapidly and accurately without the necessity for repetition. Make full use of ATIS (automatic terminal information service) and pilot-to-forecaster service for obtaining essential weather information. Know and adhere to the proper format for making inflight reports, filing or revising flight plans, etc.

- *Exercise a high degree of air discipline.* This means, at the least, to comply with all applicable rules, regulations and procedures. It means, too, keeping a good lookout at all times during visual meteorological conditions. *That is, placing naval aviation flight operations under air traffic control will reduce the chances for midair collisions, but it is still the responsibility of each individual pilot to see and be seen insofar as possible.*

Increasing air traffic in the United States dictates increased use of the air traffic control system as a means of achieving safe separation in flight. CNO has directed that all naval flight operations be placed under air traffic control procedures to the maximum extent practicable. If the ATC system is to be effective, it must provide not only safe separation of aircraft but must also provide for expeditious movement of air traffic. Airways sharing is here to stay. Do your part. Be professional. *Know the system and use it properly.*

NO LONGER must we announce that, historically, the accident rate goes up during January – it doesn't! In January 1970 *and* 1971, the accident rate fell to .94 and .95 respectively. These rates were not only record low rates for the month of January but, at the time, were record low rates for *any* month of the fiscal year.

The substantial reductions in the January 1970 and 1971 rates have been widely attributed to the beneficial effects of safety standdowns (back in the saddle programs) which were held at the beginning of January in each of those years. We have no argument with this; in fact, the conclusion that safety standdowns contribute to a lower accident rate seems inescapable. This conclusion is further buttressed by an accident rate of .54 in July 1971, following a widely-observed semi-annual safety standdown at the beginning of the month.

Therefore, a safety standdown at the beginning of January 1972, prior to resuming full flight operations after the Christmas/New Year's holidays, is strongly recommended. Don't overlook this opportunity to strike a direct, forceful blow for naval aviation safety. Start now and plan a comprehensive safety standdown for January 1972. Take a close look at maintenance, operations and facilities. Find the problems and fix them – *before* they cause trouble.

The Editor

P.S. Make it an *all hands* effort; that's the only way to go.

Planning the Standdown

Best results will be achieved if each aviation unit tailors its safety standdown to its own special requirements. Nevertheless, many elements of a good plan will apply to all aviation units. The following checklist of such elements has been adapted from previous messages of senior aviation commanders:

Convey to all hands the sure knowledge that the plan has command support.

Review aircrew knowledge of:

- General operating instructions (NATOPS, local course rules).
- Aircraft systems.
- Emergency procedures.
- Personal and survival equipment and aviation physiology.
- Facilities, e.g., location and type arresting gear.

Review ground crew knowledge of:

- Shop and line operating instructions.
- Individual job accountability.
- Aircraft inspections.
- Ground safety, including industrial safety.

Examine critically such areas as:

- Personnel fatigue resulting from long duty hours or leave travel.
- The need for OFT training or warm-up flights due to holiday layoff.
- Quality assurance organization and effectiveness.
- Number and qualification of supervisors versus span of supervisory responsibility.
- Scheduling of aircrews relative to recorded experience, currently evaluated proficiency and amount of recent operational flight time.
- The effect of winter weather on planned operations.

The above checklist is brief and is intended only as a starter. Individual units may want to add additional items to the plan to insure the safety standdown is adequate in depth and sufficiently broad in scope to accomplish the desired purpose, i.e., to refresh all personnel thoroughly in their individual areas of responsibility and establish an awareness toward eliminating hazardous conditions.

Short Snorts

People who take care make accidents rare.
Accidents begin when caution stops.
Safety Review

Emergency Throttle

WHILE performing an ETS (emergency throttle system) check, the pilot of a CH-46 saw the emergency throttle lights illuminate and a rise in Nr and Nf above 100 percent. He beeped Nr and Nf to 110 percent and then beeped both engines back. The No. 2 engine stalled and an engine fire resulted. The pilot moved the No. 2 engine condition lever to STOP, then to CRANK and pulled the No. 2 fire handle. The engine did not motor since the emergency throttle was still armed. When he realized why, he corrected the condition, motored the engine and blew the fire out.

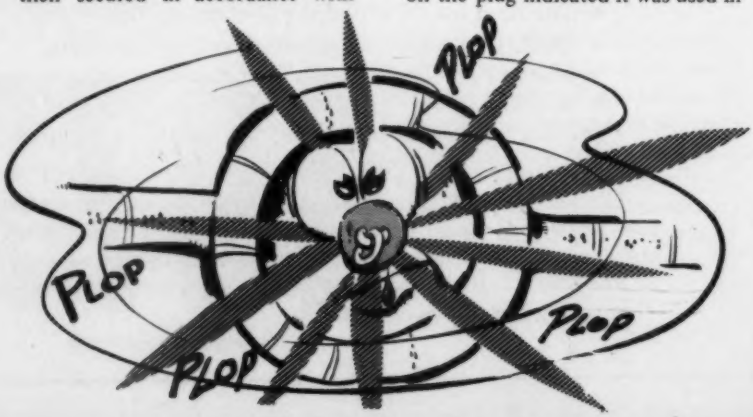
The cause of this incident was pilot deviation from NATOPS procedure by beeping engines after arming the system. This resulted from lack of knowledge concerning expected engine response. His previous experience had been with the T58-8F/10 engines and he expected the same response with this engine, a T58-8B. The command to which the pilot was attached has been pursuing a program to educate and train pilots in the ETS but not all of the differences between the installed engines have been clarified.

It is hoped that all helicopter pilots have read the article, "Emergency Throttle" by LCDR D. A. Mohr, in the November 1971 APPROACH for a basic understanding of the ETS. The CH-46 NATOPS change, contractor visits and audio-visual aids detailing the operations of the ETS, now being distributed to all H-46 operators, should help eliminate the confusion and doubts about ETS.

A Plug for the Governor

THE US-2C had been airborne for approximately 90 minutes providing target tow services for surface units. The exercise firing runs consisted of relatively shallow dives from 4500 to 2000 feet. Following the third run, the aircraft commenced a climb with mixtures rich and props set at 2300 rpm. As power was advanced through 25 inches MAP, the starboard propeller RPM increased to 2850. The No. 2 throttle and prop control were immediately retarded and RPM dropped to 2550. The engine was then secured in accordance with NATOPS procedures. Full feather was reached in 22 seconds which is about twice the normal feather cycle time. An emergency was declared and the flight was safely terminated at homebase.

Investigation revealed that a one and one-half inch tapered rubber blanking plug had wedged in the inlet oil supply port of the propeller governor adapter plate. This completely restricted the flow of oil to the governor. As the aircraft had previously flown with no propeller governor discrepancies noted, it must be assumed that operation was normal until the plug was finally forced into a position where it effectively restricted the governor oil supply below that required for normal operation. Squadron maintenance personnel, the NAS, AIMD and the local engine technical representative were all unfamiliar with the type or use of the plug in question. However, pressure lines and silver paint traces on the plug indicated it was used in



a protective manner while shipping, testing or painting the engine. A total of 75 hours had been logged on this engine since overhaul.

This incident, fortunately, is somewhat unusual and isolated. How the plug found its way into the US-2C starboard engine oil system will never be known. However, there's one thing for certain, it didn't get there by itself. Somewhere along the way somebody was careless and failed to ensure that nothing was left adrift in the aircraft engine. It will happen again unless everyone involved with naval aircraft takes the necessary time to check for foreign objects.

Hey! Watch Your RPM

FALL days are supposed to be thoroughly enjoyable and most are, but the doggonedest things can happen to a helo pilot to spoil one. (Like a summons from the skipper to explain why he forgot to watch the RPM during an autorotation.) For example, one afternoon an intrepid pilot undergoing instruction in an H-2 on his standardization checkride made a small oversight. What he overlooked, as well as his IP (instructor pilot), was the RPM during the first practice autorotation. During the descent, RPM (when last seen) was holding at 107 percent. When the pilot under training began his flare without pulling some collective, the IP did, but not soon enough to keep the RPM from going to 113 percent.

This necessitated removing and replacing components of the main and tail rotor systems as dictated by the MIM. The pilot under training as well as the IP failed to notice or make a timely attempt to correct the high RPM condition during the autorotation.

Ah, OK gents, you may ask why the big deal? Well, it just so happens that those components are high-cost items and it could be (after inspection) that the overspeed might mean they have to be discarded. Autorotations are precision maneuvers requiring finesse, *which is expected*, of any helicopter pilot.

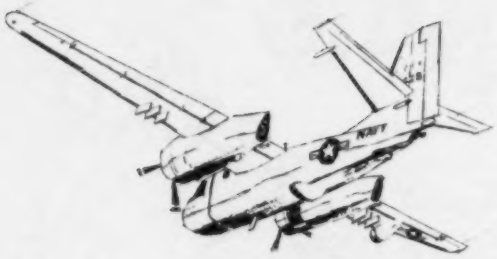
Safety Tip

EXCERPTS from CNAVANTRA Aviation Safety Bulletin: There are two problems associated with instrument takeoffs in a condition of low visibility and no horizon.

(1) Acceleration-induced errors in the attitude indicator. Research indicates that as the aircraft accelerates the vertical reference force applied to the gyro shifts, resulting in a three to five degree error in the attitude indicator presentation.

(2) Acceleration-induced false recovery perceptions by the pilot, the resultant force vector caused by acceleration and gravity causes the pilot to feel that he has slipped back and is climbing when, in fact, the aircraft may be level or even descending.

The remedy for both is proper cross-checking of all flight instruments to assure that the aircraft is performing the maneuver desired by the pilot. ◄



ONE BAILED OUT

THREE pilots made the necessary arrangements to get a US-2B for a cross-country proficiency flight to Midwest AFB from NAS Potomac. Since each one was on duty at a different activity they agreed to meet in the passenger lounge of the terminal before beginning the flight planning chores. By the time everyone arrived, Operations had the names of three passengers who wished to go along and asked the pilot if he would take them. There was room, and the pilot agreed.

An IFR flight plan was filed and the sixsome headed for the aircraft. While the two pilots, who would be flying the first leg, gave the *Stoof* a thorough preflight, the other pilot demonstrated to the passengers how to put on the parachute harness. He also explained the emergency procedures and cabin exits, and indicated the location of the parachutes in the cabin. No one gave it a second thought, but before the flight ended one of them would make a nylon descent.

After the engines were started, the pilot taxied out of the chocks, stopped and spread the wings. As the plane rolled toward the warmup spot the copilot copied the clearance. After a routine turnup they completed the checklists and turned their heads to look at the passengers after asking if everyone was strapped in and ready to go. They were cleared for takeoff and shortly thereafter were airborne. Capitol Departure Control acknowledged their airborne report with those assuring words, "radar contact." They received traffic advisories during the climb and about 15 minutes later were established on course at assigned altitude and switched to Capitol Center.

Weather was not a factor during the flight. The only thing to mar an otherwise perfect flight was the usual East Coast haze. Their route of flight paralleled a river as it flowed eastward from the approaching mountains. Idle conversation over the ICS ensued between the pilots in the cockpit and the pilot in the passenger compartment. Occasionally, the good-natured banter was interrupted by a report to, or a request by Center. A couple of frequency changes were made and soon Capitol Center bid them adios and passed them to Lakefront Center. No one, of course, realized it, but they were within 15 minutes of having their pleasant flight turn into a bucket of worms.

The MEA for that portion of the flight was 5000 feet. Cruising at 6000 feet they had been watching the hills and valleys pass beneath them with regularity – one range after another. *Suddenly*, the port engine fire-warning light illuminated! (End of inaction, beginning of rapid action.)

6691: Lakefront Center, this is Navy 6691. I have problems. The port engine fire-warning light just came on. I have feathered the engine and reversed course. Request clearance to NAS Potomac. I think I can maintain 5000 and 125 knots. Squawking code 77.

Center: Roger, 6691. Clearance follows.

The clearance was the reverse of their outbound route. Short and simple. You can say what you wish about ATC but when a pilot has an emergency those controllers mentally jump right into the cockpit and make it as easy for you as they possibly can.

Center: 6691, keep me advised of your progress. I have passed your status to Capitol Center and they are listening for you on this frequency. If you lose communications on this frequency contact Capitol Center on 322.5 or 319.8.

6691: Roger, Lakefront, and be advised we're in good shape. Are you still painting me?

Center: Affirmative. We're watching you. Contact Capitol Center in five minutes on this frequency.

6691: Wilco.

Inside the aircraft the pilot in the passenger compartment was carefully checking each passenger to

ensure their harnesses were cinched tightly and that each one knew which chute belonged to him and how to hook it up in case *bailout* was ordered. These precautions would soon pay off. As one passenger later said, "I was prepared for any eventuality; had my harness cinched up tight *and* my parachute on."

6691: Capitol Center, this is Navy 6691. Maintaining 5000 feet, estimating Valleyburg vortac in 10 minutes, squawking 77.

Center: Roger, Navy 6691. I have passed your status to NAS Potomac. They are ready for you.

6691: Capitol Center, 91, I have an oil leak now on my good engine. It looks bad.

The pilot had no sooner advised the Center of the new problem when the chip light on the starboard engine suddenly illuminated and all hands were "deafened" by the complete and utter silence as *all* power was lost. To say there was feverish activity in the cockpit and passenger cabin is a gross understatement!

While the two pilots were frantically trying to restart the port engine, the word was given to *bail out*. One passenger commented later, "There was a few second's hesitation as the order sunk in and then, when no one moved, I stepped down into the entrance way and pulled the hatch jettison lever. When the hatch blew off, I put my hands on the sides and rolled out. There was very little air blast as I left the door. After I pulled the D-ring and saw the chute billow *(beautiful sight)* I looked for other chutes but didn't see any. Soon afterwards I did see the plane in the distance and guessed they had started an engine." Meanwhile, back in the cockpit the pilots managed to get the port engine started on the second attempt. The order to bail out was belayed. Both pilots prayed silently that the original fire-warning light had been a false alarm – they needed that engine!

6691: Center, 6691, Mayday. I've lost my starboard engine. It quit, but I've restarted my port engine OK. Altitude 4000 feet, descending. I'll be able to maintain flight as long as the engine keeps running. One passenger bailed out three miles behind my present position. Intend to land at the airport below me.

Center: Roger, 6691. Capitol City altimeter 29.92. Winds northwest at 10. Authorities will be notified. Try to contact me this frequency when you land.

6691: OK, thanks.

While talking to Center the pilots had sighted an airstrip below them and decided enough was enough. They were going to land – and did so without further incident – thankful there was no further fire warning and thankful there was a runway available to land on. The airport employees and a couple of sightseers who were oblivious of the drama that had been unfolding above them were amazed to see five men climb out of the plane and almost as if on command, sink to their knees and place puckered lips on the blacktop.

The passenger who hit the silk had landed in a field. The farmer, who owned the land, not only watched him float down, but picked him and the hatch up (which had "kerplunked" not too far away). He drove the passenger to the private airport where the pilot had landed the ailing *Stoof*.

Investigation never did determine why the port engine fire-warning light had illuminated. It was obvious, however, what made the starboard engine quit. Number 1 cylinder had failed. The piston and piston pin were in several large pieces and there were holes in the cylinder wall. The master rod had separated and punched holes in No. 2 and No. 9 cylinders also. The prop shaft had sheared and was held on the engine just by the brush block assembly. *Whew!*

The aircraft was left at the airport to be repaired, and the sixsome were lifted back to NAS Potomac by a Marine helicopter from MCAS Quarantine. The Marine CH-46 had been flying locally and was diverted to proceed in the direction of the emergency while the *Stoof* was still eastbound.

Many months ago an aircraft accident did occur because a pilot apparently did not do all he could (like, advance the throttle) to keep his aircraft airborne. The story related above was an incident, not an accident, because the pilot never gave up. Even though in extremis he stayed ahead of the situation, and by dint of training, know-how and *reasonable* persistence he saved the aircraft and possibly the lives of those remaining aboard. ◄

ASOs, do you want an idea, before the fact, to prevent damage to aircraft and injury to personnel and passengers? If so, you might form a squadron team to help look for . . .

Misguided Missiles

ANYTHING in or around operating aircraft should be carefully secured to prevent accidents and injuries. Certain areas, such as the flight and hangar deck aboard ship and line areas ashore, have been given considerable attention by written word, audio-visual means and posters. However, one area which perhaps has not been emphasized enough is the inside of aircraft. The myriad of unsecured items found in most operating aircraft can be potential accident makers and injury producers.

Most aircraft capable of carrying cargo have many attachments and tie-down rings to facilitate the carrying of cargo. In addition, there are other considerations to be taken into account – such as weight of the item with regard to the CG of the aircraft or weight limitations in certain compartments of the aircraft. It may be perfectly acceptable to position a 2000-pound load in an aft compartment when there is other weight forward, but to load the same weight in an aft compartment with nothing forward, could exceed the aft CG limits of the aircraft. For example, a CH-46 was loaded internally with a heavy, bulky load. The crew chief supervised the loading, and after the load had been carefully winched, pushed, pulled, and successfully positioned inside, he aided in tying down the load. As events unfolded, the load should have been worked forward, *just one more foot,* to keep the aft CG of the chopper in limits. But it wasn't. When the pilot lifted into a hover (total weight was no problem) the tail of the helicopter became homesick for the ground. The strain of the load was too much for two of the forward tie-downs which let go; the weight shifted aft and the crew chief was pinned to the bulkhead when he tried to correct the situation. The pilot eased the helicopter back onto the deck and with forward cyclic was able to keep the H-46 level enough to release some pressure of the load against the crew chief. Not only did the crew chief narrowly avert being crushed, but also the rear rotor narrowly escaped making contact with the concrete. Only the thinnest of margins separated injury and damage from death and probable strike.

Not nearly as dramatic as the above incident, but one which resulted in serious injury, concerns a coffee pot. Coffee pot? Yes! A big "mamoo" (transport type) landed at a foreign base, and during rollout the pilot applied normal reverse thrust. *A large multicup coffee pot tipped over spilling hot coffee on two nearby strapped-in occupants.* One of them was badly burned by the hot coffee. He received second degree burns of the lower waist and upper thighs.

Some time ago, the crew of a VP aircraft placed an unsecured extra box of ammo on the deck of the after station. While flying their regular patrol the pilots had to fly through a cold front. During the transit, heavy turbulence was encountered and the ammunition box was upset. It inflicted a painful ankle injury on the waist-station lookout and bent one bulkhead stringer almost 45 degrees.

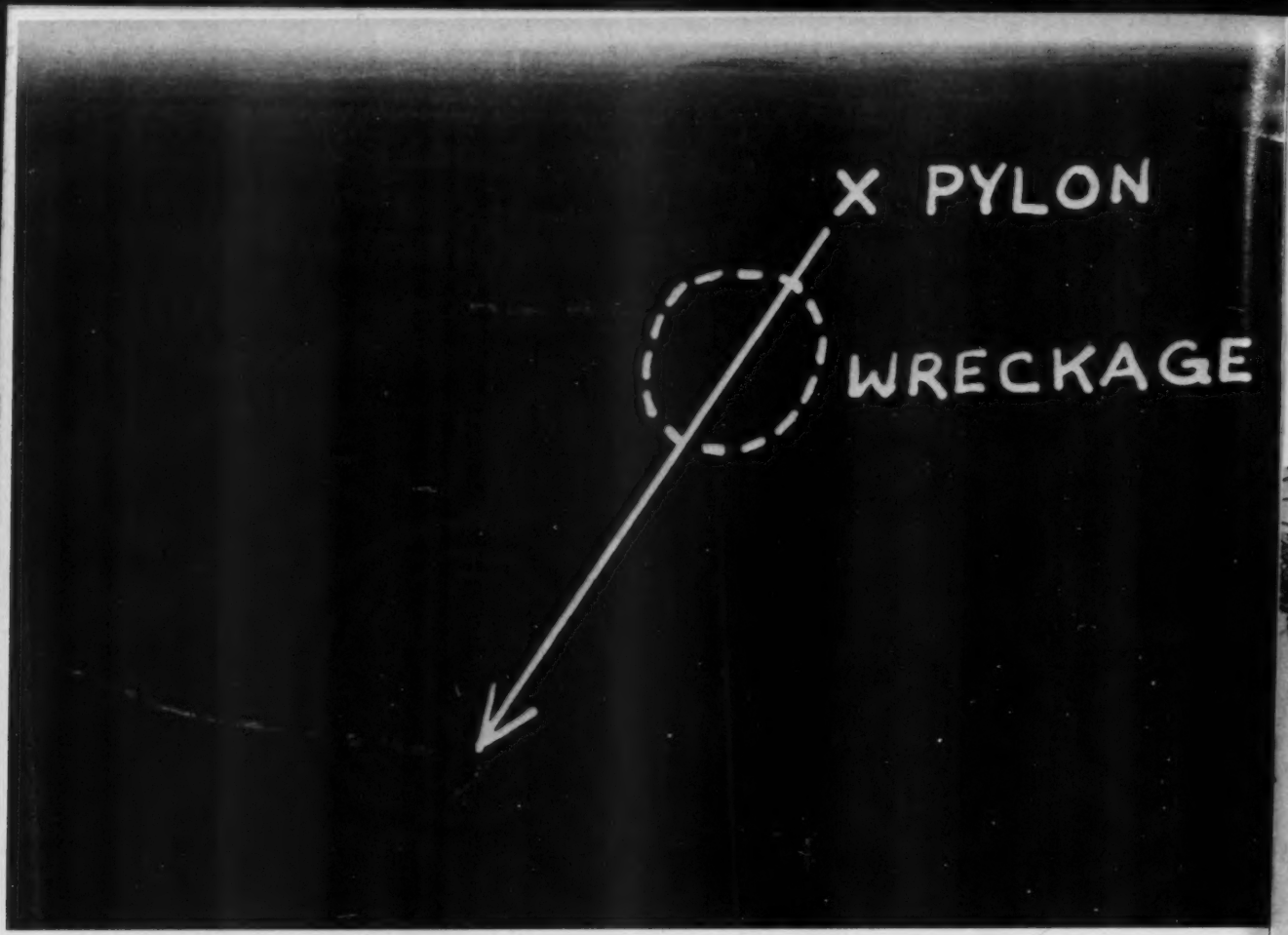
These and many other similar incidents are sufficient to start a campaign to eliminate hazards within aircraft. It wouldn't be too far wrong to make a SWAG (scientific, wild, accurate guess) that an inspection of aircraft in any squadron will reveal many unsecured items lying around – real booby traps just waiting for the right conditions to cause injury or damage. Let your imagination run wild, but to get started you might look for:

- Dangerously located or unsecured coffee pots and thermos jugs
- Shoes, white hats, or old flight suits stuffed somewhere, or rags lying around
- A piece of line on the deck or hanging somewhere
- Pencils, screwdrivers, or other sharp pointed objects "temporarily" stowed between wiring or stuck somewhere
- Maps, charts, notebook pads, MRC cards, magazines, or other paper items lying in wait to cut a finger or sail up into someone's face
- Extra cans of engine and hydraulic oil or empty cans and containers of any kind just "in the plane"
- Loose lifejackets, chutes, and liferafts
- Unsecured boxes for stowing tools, engine covers, and other loose gear
- Loose or broken stowage fittings for tail posts, battle lanterns, ladders, and other heavy items

You know, it's amazing when you stop to think about it – just how many different kinds of hazards there are to airframes and people lying around in aircraft. If a concerted effort is made to clean up these potentially dangerous items, a dual benefit may occur. An inspection could reveal corrosion pockets, loose or cracked ducting, insulation, tubing, and wiring which might have otherwise gone unnoticed.

"It is not necessary to wait for some apparently inconsequential item to return to haunt us. The interior of any aircraft becomes the living area for many people for varying periods of time, and therefore each item in the living area (*cockpit, crew compartment, passenger cabin*) must be examined for its effects on the inhabitants." So stated the CO of the squadron involved in the coffee pot incident.

'Tis true! Everyone knows that sudden stops make missiles out of anything not properly secured – you, the toolbox, the coffee pot or . . .



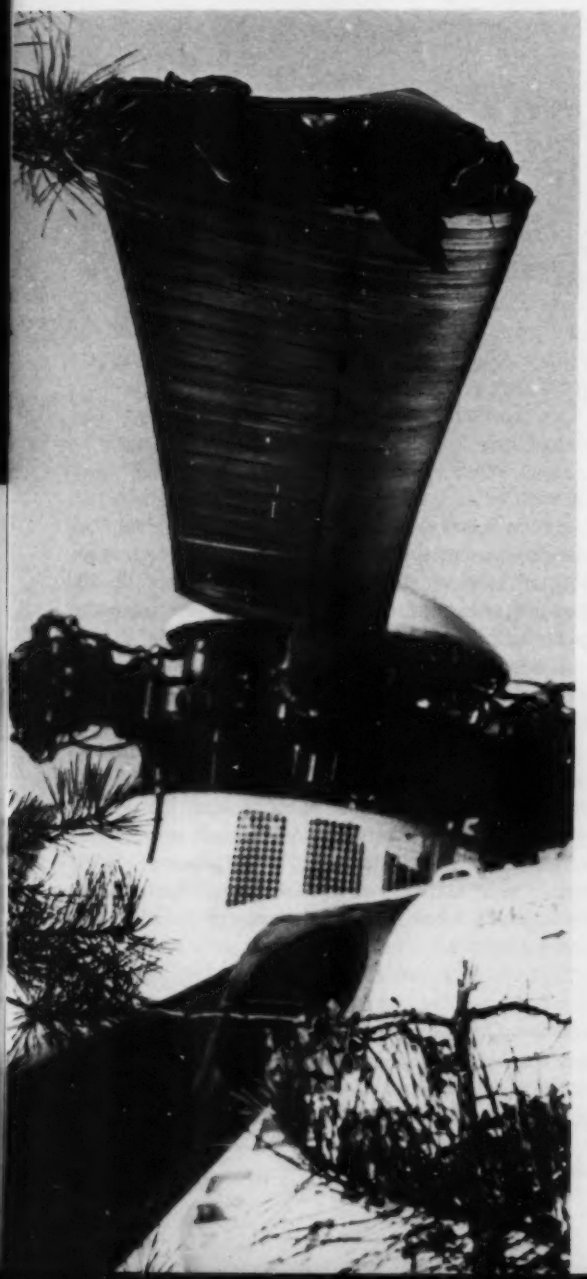
A Night to Remember

illus 14-17

THE SUN was shining brightly on this beautiful morning at NAS South as an SH-3A crew began preflighting their aircraft in preparation for a return trip to NAS North. Everything seemed to be proceeding smoothly until a hydraulic oil leak was detected aft of No. 1 engine. An ADJ1 troubleshooter scrambled up to the transmission deck to have a look-see. He diagnosed the problem as a faulty oil ring and input seal on the drive shaft which would require changing. To accomplish this, the engine had to be pulled. This was done and the mech's diagnosis proved correct. A call was then placed to the parent squadron, located at NAS North, requesting the necessary parts. The parts arrived the following afternoon and the crew spent that evening and the next morning installing them. By early afternoon all lines were connected and the aircraft was ready for test. Engines were started, rotors engaged, and when no leaks or other improper operations were noted, a series of test turns were made. After about 30 minutes, the SH-3A

Damage to main rotor blade incurred during landing

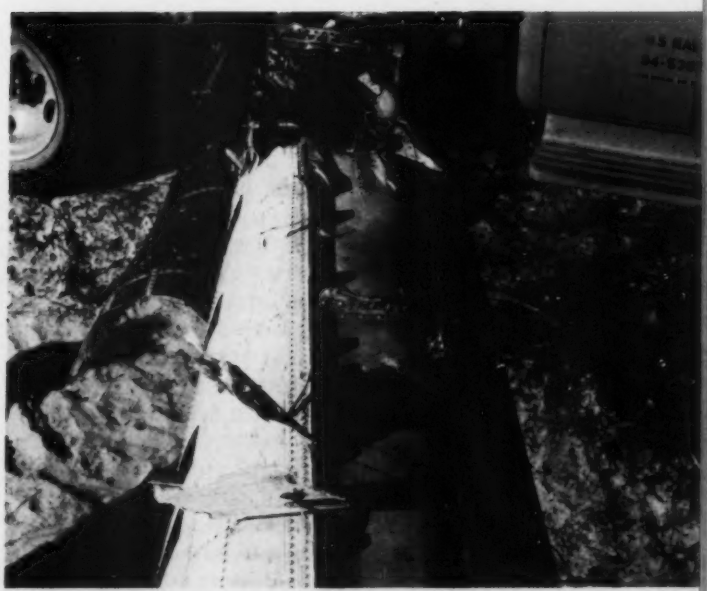
Almost anyone who has strapped an aircraft on can recount one or more hairy flight experiences before he folds his wings and takes to the rocking chair. This includes pilots, crewmen and, in some cases, even passengers. Some of these birdmen were involved only in eyeball-bulging near-misses. Others, however, were not so fortunate and found themselves party to a mishap. The mishap cause factors are countless and varied, but the great majority fall into one of the following three categories: pilot or crew, other personnel, or material failure. The mishap described below was caused by the latter two and we can tell you right now, without reservation, it's a real hair-raiser.



was shut down. A test-and-go VFR flight plan was filed, and preflight conducted. The aircraft was again started, rotors engaged and, following all checks, lifted into a hover. No discrepancies were noted so the pilot asked for and received takeoff clearance, then headed the helo towards the intermediate stop at Midpoint AFB.

The flight to Midpoint was routine. After landing, the aircraft was refueled and the pilot filed VFR for NAS North. Following preflight, start and rotor engagement, the aircraft was cleared for takeoff.

During this leg of the flight, the pilot occupied the copilot's seat (left side) and the copilot was in the pilot's seat (right side). About 28 miles from homebase, the pilot obtained a lock-on from NAS North tacan and the copilot headed the aircraft home. The pilot then switched from enroute frequency to tower frequency and at the same time noted that the NAS rotating beacon was dead ahead. The preceding occurred seconds



Damage to tail assembly.

Failed upper and lower pylon hinge fittings.

prior to the accident.

At the moment of the mishap, the pilot was looking at the gages. The aircraft was at 1500 feet altitude, 110 KIAS, in a straight and level attitude with a DME reading of about 17 miles. In his statement following the accident, the pilot said, "This is the point where I intended to call the tower for check-in. Unfortunately, as later events would prove, I did not get the call in."

A loud cracking or grinding sound was heard and the aircraft rapidly veered to the right in varying degrees of pitch and bank changes. The pilot grabbed the controls of the aircraft which was then in a continuing right turn and extreme nose-high attitude. The cockpit was in complete darkness as the pilot attempted to push the nose over using forward cyclic and full-down collective. There was no rotary rudder directional control. With the cyclic forward, the aircraft then entered an extremely nose-low attitude.

The pilot stated, "At this point, the aircraft was almost completely uncontrollable. The pressures on the cyclic were similar to an aux-servo-off condition and the aircraft responded to controls inputs unlike any other emergency I had ever experienced. It was apparent that this was one emergency we wouldn't be able to recover from. Maintaining full-down collective, I continually attempted to hold an autorotation attitude using the small visual horizon available as a reference. The aircraft constantly pitched during the descent and always felt like it was in a left-hand turn. At about 150 feet, in a nose-high attitude, I saw the ground below. At this time, I had the visual sensation of rearward right-turn flight. I pushed the cyclic forward in an attempt to level the nose and added full-up collective as I saw the ground approaching. The aircraft touched down so softly and in such a level attitude, I couldn't believe we were on the deck. The aircraft systems were then secured. As my copilot and I shook hands, the crew reported that there were no injuries."

It was close to 2100 when the helo made its emergency landing. An inspection of the aircraft by the crew quickly revealed the cause. The tail pylon assembly had departed the aircraft.

The area of landing was heavily wooded and desolate so the crew prepared immediately for a difficult survival

situation. The aircraft was in surprisingly good material condition, and its soundness would add to the physical comfort of all hands during a night of subfreezing temperatures.

Everyone had ample flight clothing and survival gear, and a quick survey showed that there was sufficient rescue equipment available. Two of the men secured dry wood and started a fire to provide warmth for the crew. The liferaft was inflated and used as a windbreak for the shelter. Seat cushions and soundproofing were placed on the ground to help insulate the crew against the cold. Night flares, pyrotechnics and pencil flares were kept at the ready in the event an aircraft was sighted in the area. Within 30 minutes after landing, there was an organized campsite available which would provide warmth and shelter for the night.

Five aircraft were spotted during the night, but none responded to the crew's use of flares and the pyrotechnic pistol. One aircraft made a 180-degree turn at about 4000 feet, and for a moment it looked like salvation. However, the aircraft continued on and it was apparent the pilot had not seen the distress signals.

By 0300, the crew was pretty well convinced that no airborne SAR was underway. A discussion ensued and the decision was made to remain with the aircraft vice tramping off looking for a road and some form of civilization. In addition, plans were made to build a large oil fire at dawn to assist in recognition from the air.

When the first light of day arrived, the crew heard the sound of an approaching vehicle and headlights glared forth. A deer hunter in a pickup truck came upon the group with a look of amazement on his face. Following a short explanation by the pilot as to what had transpired, the deer hunter took the crew to his cabin. The pilot borrowed his truck and headed for the nearest telephone to call NAS North. Three hours later transportation arrived and returned the happy crew to homebase.

To say that this was a hairy flight experience would be putting it mildly. The thought of making a night autorotation landing into an unlighted, wooded area with all flight controls functioning properly is terrifying enough. To think of doing it without tail rotor control would lower the blood temperature of any helo pilot to -40°F. The pilot did a commendable job by landing his aircraft in such a smooth manner that no member of the crew suffered injury. However, without a helping hand from Above, not to mention Lady Luck (one would need both under the conditions described above), the crew would not have fared so well.

Now that you know *what* happened, let's examine *why* it happened. The AAB (aircraft accident board) concluded that there were two cause factors which led to this mishap. The first was material failure. The upper and lower pylon fold fitting assemblies separated at the first rivet holes from the aft end. The bulkhead installation skin was then torn at the rear fuselage splice and the tail pylon separated from the aircraft. What caused it to separate? During the aircraft's last PAR (progressive aircraft rework) some 8 months prior to the mishap, NARF personnel failed to de-burr the HI-LOK holes in the pylon fold fitting after drill runthrough. This allowed a minute crack to develop in the left-hand upper pylon hinge fitting. The second cause factor was the failure of NARF x-ray personnel to thoroughly inspect x-rays of the hinge fitting. Had they done so the crack would have been detected. When AFC (airframes change) 267 was incorporated in the aircraft during PAR, the crack area was hidden by a strap which was applied over the pylon hinge fitting. As a result, organizational maintenance personnel had no way of making a visual inspection of the area. In other words, once this crack began, the aircraft became a flying accident waiting for a place to happen.

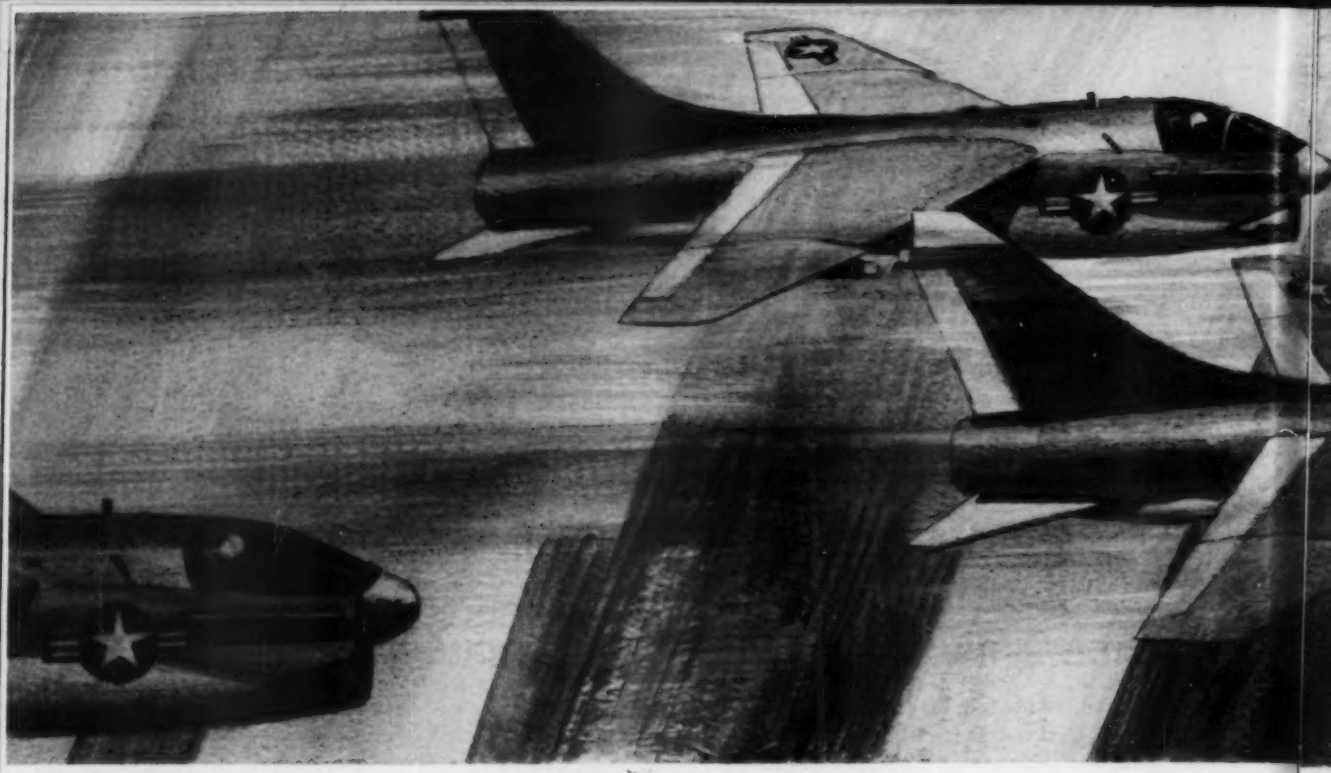
An interesting sidelight to this mishap was the decision of the SAR coordinator to delay the SAR effort until dawn. Considering the existing weather (clear with 10 miles visibility), the distance from the last known reporting point (about 110 miles) with a proposed track, subfreezing temperatures and the fact that night signaling devices were aboard the aircraft, the decision to delay search until first light is questionable. The National Search and Rescue Manual, section 260, page 2-9, entitled, "Responsibility of SAR Participants," states:

"The assignment of SAR responsibility among commands in no way affects the fundamental responsibility of any activity to initiate SAR operations as circumstances dictate. Independent action must be reported immediately to the appropriate SAR coordinator."

Had serious injury been sustained in the accident, the delay could have resulted in greatly diminished chances of survival.

The SH-3A crew involved in this mishap had a mighty harrowing experience. Not only did they have to endure a hair-raising emergency, but a night in the woods in subfreezing temperatures as well. Their professionalism during the entire ordeal is commendable. The Navy lost an aircraft, which is unfortunate, but fortunately we didn't lose the crew.

There are a lot of lessons to be learned from this mishap, but the main one, once again, is lack of attention to detail on the part of aviation personnel, both military and civilian. Let's plug these holes now to prevent hairy tales like the one told herein from occurring in the future.



'...Your Signal, Bingo.'

TRAINING flight operations were being conducted one afternoon aboard a large CVA. A Case I VFR recovery was planned for 1530; however, before the recovery commenced, the CVA encountered fog that had been hidden by haze and low clouds. With weather at the ship suddenly below minimums, eight aircraft were ordered to bingo to NAS Divert.

The latest NAS Divert weather held by the ship was 800 scattered, 1500 broken, 8000 overcast, four miles visibility in haze and the field in thunderstorm condition I. A notam indicated that runway 14L was closed due to construction.

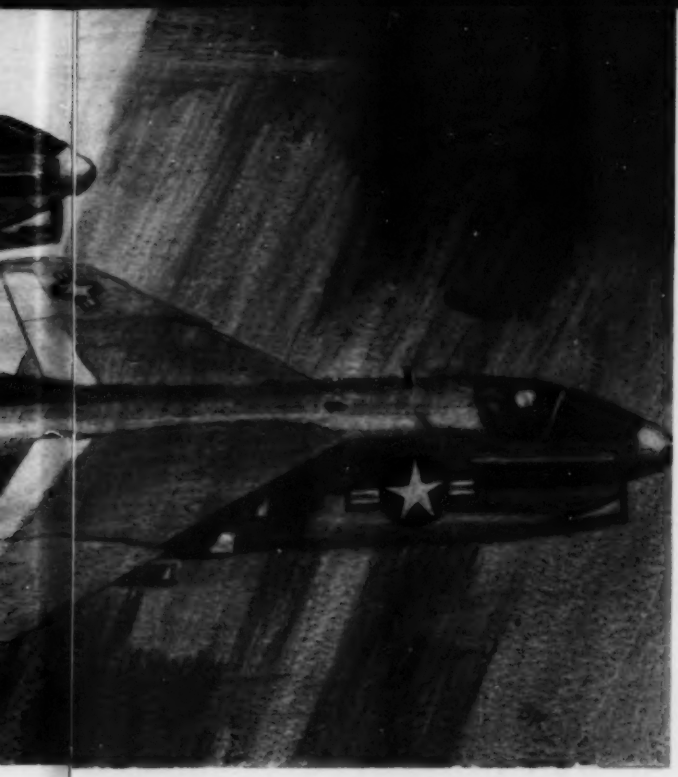
Meanwhile, the weather at NAS Divert had rapidly begun to deteriorate due to intense thunderstorm activity in the immediate vicinity of the field. Unfortunately, attempts to relay, via Raspberry circuit, the change in weather conditions to the CVA proved fruitless. Likewise, the ship was unable to provide NAS Divert with the information that aircraft were being diverted.

At 1535, Steelhead 727 (an E-2) reported as bingo from the CVA and requested vectors to Nearby NAS (his homeplate). Ten minutes later Cuspidor 425 (also from the CVA) reported in at 65 nm from NAS Divert. About this time a telephone call was received by NAS Divert, from the Area Operating Coordinator, advising that "10 to 11" aircraft were inbound from the ship.

At 1540, Widow 304 (an A-7) reported in, declaring an emergency. The pilot advised that he was in a maximum range descent due to minimum fuel. Widow 312 also reported in asking for an approach but was told to stand by while information was being obtained from the aircraft in distress. Seconds later, Flincher 511, Armbuster 513, and Oddball 301 (all A-7s) reported also declaring low fuel emergencies. Interspersed with the emergencies, aircraft returning from local training flights checked in for approaches but were given holding instructions.

About 1605, Beermug 112 (an F-4) reported inbound, with no navaids and requested a random radar pickup to a straight-in approach. Having a good fuel supply, he was told to stand by. Immediately thereafter, he lost all communications and SIF capability. Widow 312, who had asked for an approach earlier, now declared an emergency. At 1610, Widow 306 checked in, also declaring an emergency.

Meanwhile, Beermug 112, maintaining VFR, decided to proceed into the field on his own. Staring at the undercast, the pilot spotted runways through a break in the clouds. Descending through the hole, he broke out at



600 feet and flew a pass across the field to determine wind direction and duty runway. He then landed on runway 05R, *engaging the arresting gear.* Widow 304 was, at the time, on final for 05R. Due to low fuel (350 lbs) he was forced to land, passing Beermug 112 (arresting gear and all) on the runway. Seconds later, Widow 312 landed on runway 05L, also engaging the arresting gear. The next two aircraft with low fuel (on PAR finals) were cleared to circle to land on runway 14R. The second of these engaged the arresting gear during rollout.

At this point, there were no runways open at NAS Divert and numerous aircraft were either on approach or holding. The ATC facility watch supervisor momentarily weighed the alternative solutions of landing aircraft on opposite runways with instructions to take the arresting gear; or landing the aircraft on the taxiways – a step used successfully at this field some years earlier. Seconds later, however, the field crew opened runway 05R (without the shortfield arresting gear). All remaining aircraft then made successful normal landings as the remaining runways were cleared and made available.

The decision to bingo the aircraft appears to have been unavoidable due to weather at the ship. However, the choice of NAS Divert as the bingo field was based on outdated weather reports. This lack of effective communication between the ship and NAS Divert was caused by the unreliability of the Raspberry radio circuit. An endorser to this incident report made some cogent observations concerning ship-to-shore communications. He stated:

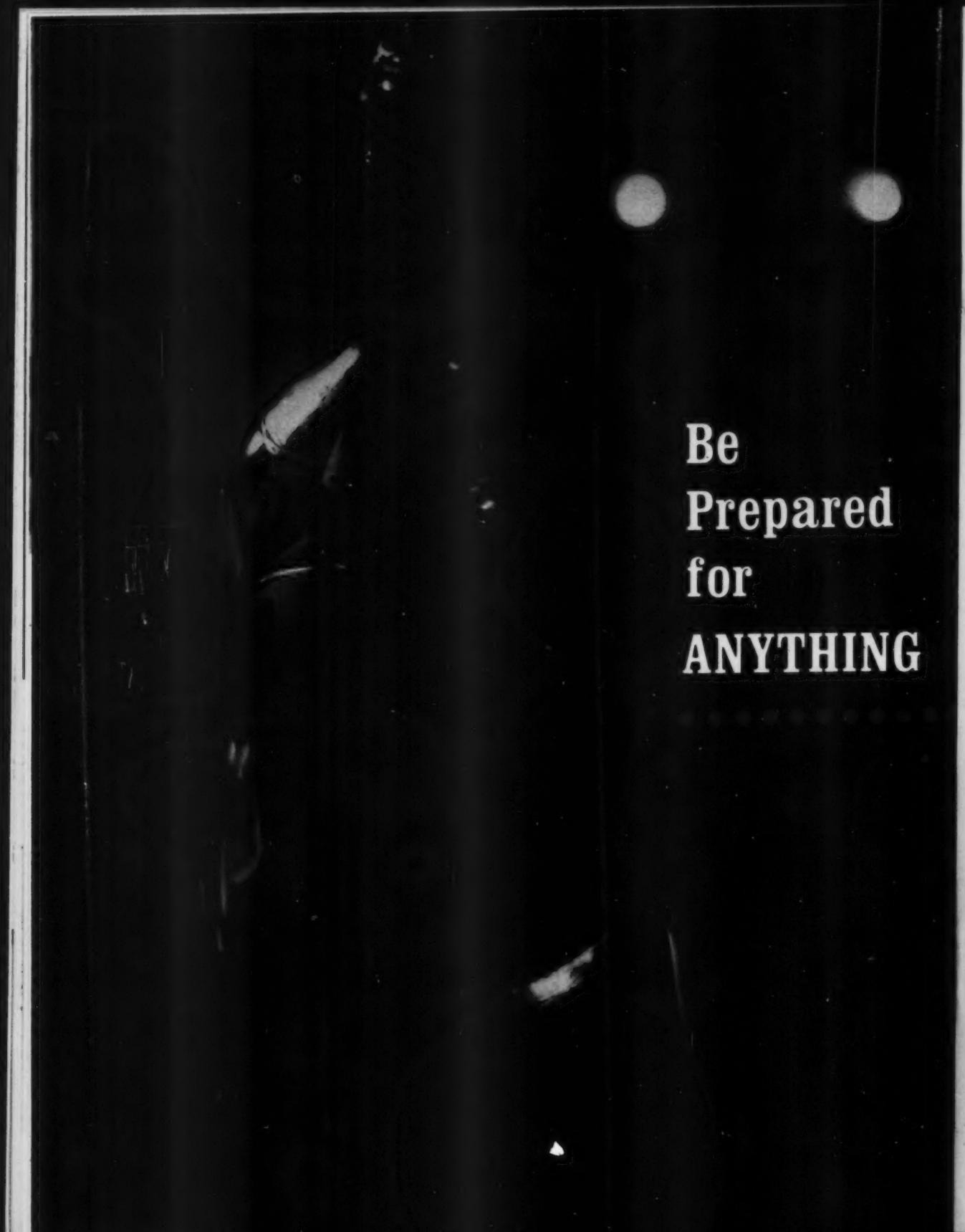
"It is imperative that adequate communications be maintained between the ship and divert fields during periods of air operations. The accurate and timely exchange of information on weather and facility conditions, as well as movement of aircraft between ship and shore, is necessary for the safe conduct of flight operations. The ship and NAS Divert have jointly taken action to improve the Raspberry and backup communication nets. The ultimate in circuit reliability for the Raspberry circuits, as with all long-range radio paths, can best be effected by replacing them with comm via satellite; however, practical considerations of limited equipment, voice channels and satellite configured units preclude early implementation. The primary and secondary frequencies assigned the circuit for communication with NAS Divert are within close proximity of each other and tend to degrade effective 24-hour communications coverage. It is recommended that additional frequencies be assigned this circuit to ensure adequate coverage. The ship is currently using NORATS (Naval Operational Radio and Telephone System) as a backup voice link.

"Aircraft such as the E-2B and KA-6D with multiple radios can, and should, be used to relay current weather and alert divert fields of aircraft 'bingos.' These aircraft are normally under the control of the ship and would be a rapid means of passing information. This procedure has been established as a standard operating procedure within the air wing and the ship.

"Diverted aircraft should be changed over to the divert field approach control as early as possible to facilitate their identification and control.

"Continued emphasis must be directed to ensure timely information on the availability of tankers, divert fuel requirements and weather information reach the pilots. Air wing and CATCC procedures have been reviewed and specific action taken to improve the flow of essential information. All air wing pilots have been rebriefed on bingo procedures and tanker SOP."

How about your ship-to-shore communications? Are they up to snuff? Can they be depended upon in an emergency? Have you an alternate method of communications should contact by the primary means fail? Don't wait until a full launch has to scramble shoreward to find out. Afford your pilots the best insurance available, so that when they hear, "... Your signal, bingo," it'll be a piece of cake. ◄


Be
Prepared
for
ANYTHING

A FRIGHTENING aspect of the traffic picture is the fact that one need not be at fault himself to suffer death or injury. In fact it is estimated that seven out of 10 killed or injured suffer innocently at the hands of a traffic-law violator.

Driving defensively heightens the odds in your favor. Yet, there is always the possibility of facing the type of situation in which one rounds a curve to see a speeding car approaching him on the wrong side of the road.

Driving is a dangerous business, but certain simple safeguards can raise the chances of survival.

Always wear seat belts. Universal use of them could cut deaths and injuries one-third and lessen the seriousness of injuries that do occur. Don't fall for the fatal "short trip" philosophy. Two-thirds of all fatal crashes occur within 25 miles of the drivers' homes.

Don't drink and drive. You might think you are completely unaffected or that your driving skills can compensate for a mild alcoholic effect. But judgment, perception and reaction are so affected by relatively small amounts of alcohol that you might get into dangerous situations you would otherwise have avoided or be unable to extricate yourself from those not of your own making.

Don't drive after dark if you can avoid it. More than half of all deaths occur during hours of darkness, despite far less vehicular travel. If you must drive, cut your speed and increase your caution. The same goes for adverse weather conditions.

Don't drive when sleepy or tired. The sleeping driver doesn't walk away from the crash he causes. If emotionally upset, either don't drive or try to divorce yourself temporarily from your worries.

Be careful on hillcrests and curves for cars on the wrong side of the road. Approach with caution and always enter a curve at reduced speed until you can gage the sharpness of it.

Forget all about your rights and take nothing for granted. If there is any question of someone taking your right-of-way, give it up quickly. However, try to make certain that your relinquishing it does not confuse a third driver.

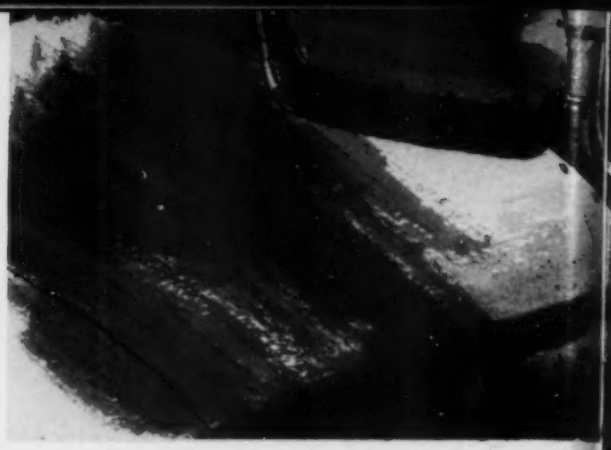
Try to develop patience. Hurrying in traffic is gambling seconds against lives.

Practice courtesy and always keep the Golden Rule in mind. You will not get much return on your investment from others, but you shift those survival odds a little more in your favor.

Don't speed and constantly change lanes. Drive with the flow of traffic and keep a safe distance behind the car in front, remembering to increase this distance under adverse weather or sight conditions.

In short, try not to drive under any adverse conditions; do not rely upon the cooperation of other drivers and be prepared for anything. ◄

D.C. Traffic Safety Reporter



FIRE! ...Everyone Out!

MOST transport aircraft, including the C-118, have rather elaborate ditching bills for just about every conceivable condition. However, despite the care and thought taken to prepare ditching bills, it frequently happens that a real emergency brings to light certain inadequacies. The C-118, for example, has been around for a long time and has provided reliable air transportation all over the world for millions of military and civilian passengers. Yet, it took a premature ground evacuation, within the past year, to point out the necessity to expand the ground evacuation part of the ditching bill (pgs. 5-79/80 of the C-118 NATOPS Flight Manual).

Cleared to Land

A C-118 with a load of passengers departed NAS Southside for NAS Northtown. It was a routine, scheduled flight and uneventful until after touchdown. The pilot made a smooth night landing and rolled out to the end of the runway. As he slowed the aircraft to turn off the duty runway, a stack fire on No. 4 engine lit up the night. RPM decayed and the engine quit as the plane cleared the runway. As one would suspect, a lot of people became quite busy in short order. The pilot maneuvered the aircraft so he could stop. The plane captain was cranking the No. 4 engine trying to blow out the flames. The flight attendant was trying to calm the more excitable passengers and took action to prepare the cabin for emergency ground evacuation. *Right about this time either the pilot or copilot might have come up on the PA system and in a calm voice informed those in the cabin as to what was happening.* However, there was no word from up front, because the PA system was inoperative. So the flight attendant and passengers seeing the fire did what comes naturally – started emergency egress procedures in a hurry. The flight attendant, after ascertaining the cabin was depressurized, attempted to rig the escape chute and open the cabin door. A passenger, seeing the flight attendant having trouble, assisted in opening the door. (Both No. 1 and No. 2 engines were still turning.) When the pilot reached a spot where he could secure the engines (the prop blast, even at idle power, makes it very difficult to open the door), the door opened freely and *both men lost their balance and pitched out!* The flight attendant fell to the concrete, fractured both arms, broke a finger and suffered a cut under his chin. The passenger was luckier. As he fell he wrapped his arms around the escape slide and incurred only "mat burns" on his hands and arms. The remaining passengers and crew deplaned by a passenger ladder. The engine fire was quickly extinguished by the crash crew who had arrived on the scene.

Aftermath

An investigation revealed that many actions by the crew had left much to be desired. A need to change a section of the NATOPS Flight Manual concerning ground evacuation procedures also became evident. The No. 4 engine failed as a result of aerodynamic propeller loading and idle power, not as a result of any internal failure. The stack fire ignited because of unburned gases and raw avgas accumulation in the hot stacks. Pilots and flight engineers of C-118s, are generally aware that occasionally an engine will quit when entering or leaving reverse pitch if cockpit action is slow in the handling of throttles in idle range. The NATOPS Flight Manual contains a *note* pertaining to reversing and unreversing props with the possibility of engine stoppage and afterfire. The investigation further determined that the

escape chute had not been properly fastened (in accordance with NATOPS) after passengers boarded at Southside. This particular aircraft did not have a leverage bar to aid in opening the cabin door and there was an inoperative PA and interphone system which prevented communications between the pilots and flight attendant.

The board, in addition to emphasizing compliance with NATOPS, recommended an MRC be written to provide inspection of the PA, flight interphone and service interphone systems for calendar inspections as well as inspection of the installed headsets and microphones in the cockpit, flight compartment and cabin on preflight, postflight and daily inspection cards. The board additionally commented on the necessity of practice crash/ditch and ground evacuation drills for transport crews. The present ground evacuation portion on ditching drills in the NATOPS Flight Manual assumes a full flight crew aboard for every flight (including a navigator and off duty pilot), when actually there are many flights flown with just a basic crew. A proposed NATOPS change reassigns duties commensurate with the number of crewmen aboard. The duties of the person directing the ground evacuation have also been changed to ensure orderly and safe debarkation.

In developing this article, two operating commands were contacted with regard to the number of drills to which complete crews were subject. One command reported that flight crews actually performed simulated crash, ditching, and ground evacuation drills during safety standdowns. The drills involve a certain amount of realism in that aircraft are filled with personnel to simulate passengers and flight crews are at their stations. When all is ready, the evaluator announces the kind of drill to be performed and then observes the drill while timing the crew. The other command reported that there is an annual ditching drill requirement (on the NATOPS anniversary renewal date) as well as an annual inspection drill by the VR NATOPS evaluator. In the latter case, the complete flight crew is observed but passengers are not simulated. OPNAVINST 3710.7F, para 607 b. (Ditching and Bailout Procedures) establishes the requirement for prominently displayed ditching and bailout bills in all multipiloted aircraft having embarked crewmen and passengers. It also directs frequent drills to familiarize crews with these instructions.

Not too often do transport aircraft have to be abandoned, but when it is necessary, whether at sea or over land, it usually means shepherding a lot of untrained people to safety as quickly as possible. To prepare for this eventuality it behooves crews to have the precision and alacrity that can be gained only through frequent drills and thorough briefings. ◄

12 Pages
In Two Parts

Virginian-Pilot.

True to the Democratic Party in Victory or Defeat

VOL. XIX. NO. 68. NORFOLK, VA., FRIDAY DECEMBER 18, 1903. TWELVE PAGES. THREE CENTS PER COPY.

FLYING MACHINE SOARS 3 MILES IN TEETH OF HIGH WIND OVER SAND HILLS AND WAVES AT KITTY HAWK ON CAROLINA COAST

TALLY SHEETS WILL DECIDE CONTEST

Chairman Forced to Richmond to Get ...ets For Committee

TREHY FACTION HAS ADVANTAGE THUS FAR

All Proxies Ruled Out of Meeting by Decisive Vote Before Fight Began

BOTH SIDES TO ABIDE BY FINAL DECISION

(Special to Virginian-Pilot.)
RICHMOND, VA., Dec. 17.

U. S. LANDING PARTY FINDS STRONG CAMP OF COLOMBIAN TROOPS

Natives Order American Flag Hauled Down on Cutter But it Stays Put

(By Cable to Virginian-Pilot.)
COLON, DEC. 17.

COTTON TRADE TO DEFEAT COTTON GAMBLING

English Spinners to Meet in Manchester to Discuss Curtailing the Production—International Movement Possible

(By Telegraph to Virginian-Pilot.)
CHARLOTTE, N. C., Dec. 17.

TO DEEPEN THE HARBOR AT NORFOLK

Secretary of War to Report Plan to Congress For Making Ship Channel Here 35 Feet Deep to Float Big Warships

SENATOR MARTIN INTRODUCED MEASUER

(Special to Virginian-Pilot.)
Washington, Dec. 17.

SCARE OF SHORTS ADVANCES COTTON

(By Telegraph to Virginian-Pilot.)
NEW YORK, DEC. 17.

"WANTS CANAL BUILT WITHOUT SUSPICION OF NATIONAL DISHONOR"

Senator Hoar and Gorman in Fiery Debate on Floor of the Senate

(By Telegraph to Virginian-Pilot.)
WASHINGTON, DEC. 17.

(Continued on Page 2.)

THIRTY MILLION FOR RUNNING RISK

(By Telegraph to Virginian-Pilot.)
NEW YORK, Dec. 17.

NO BALLOON ATTACHED TO AID IT

Three Years of Hard, Secret Work by Two Ohio Brothers Crowned With Success

ACCOMPLISHED WHAT LANGLEY FAILED AT

With Man as Passenger Huge Machine Flew Like Bird Under Perfect Control

BOX KITE PRINCIPLE WITH TWO PROPELLERS

The problem of aerial navigation without the use of a balloon has been solved at last.

HOW MACHINE IS BUILT.

national Movement Possible

JOURNAL OF SHORTS ADVANCES COTTON

THIRTY MILLION FOR RUNNING RISK

SENSATIONAL INCIDENT IN THE OYSTER FIGHT

COURTESY OF THE VIRGINIAN-PILOT

68 years ago this month...

THIS month we celebrate the 68th anniversary of the first powered flight. On 17 December 1903, Orville and Wilbur Wright succeeded in launching the first aircraft to make successful powered flight. A modest beginning to be sure, but since that historic date, the world has witnessed incredible progress in the development and application of aircraft for both civil and military purposes. The aviation pioneers who contributed their effort, courage and often their lives toward this progress, are legion. Those of us who fly – who *must* fly – owe them a debt of unending gratitude.

In spite of great progress over the last 68 years and the fantastic future developments which we envision, we must remember that aviators are still bound by the same physical laws with which the Wright Brothers contended. Therefore, not only must we continue to give full consideration to the immutable laws of physics, we must also fully recognize the importance of human factors if we are to realize our full potential in this Age of Flight.

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Chairman Forced to Richmond to Get ...ets For Committee

TREHY FACTION HAS ADVANTAGE THUS FAR

All Proxies Ruled Out of Meeting by Decisive Vote Before Fight Began

BOTH SIDES TO ABIDE BY FINAL DECISION

(Special to Virginian-Pilot.)
RICHMOND, VA., Dec. 17.

U. S. LANDING PARTY FINDS STRONG CAMP OF COLOMBIAN TROOPS

Natives Order American Flag Hauled Down on Cutter But it Stays Put

(By Cable to Virginian-Pilot.)
COLON, DEC. 17.

TO DEEPEN THE HARBOR AT NORFOLK

Secretary of War to Report Plan to Congress For Making Ship Channel Here 35 Feet Deep to Float Big Warships

SENATOR MARTIN INTRODUCED MEASUER

(Special to Virginian-Pilot.)

"WANTS CANAL BUILT WITHOUT SUSPICION OF NATIONAL DISHONOR"

Senator Hoar and Gorman in Fiery Debate on Floor of the Senate

(By Telegraph to Virginian-Pilot.)
WASHINGTON, DEC. 17.

(Continued on Page 9.)

NO BALLOON ATTACHED TO AID IT

Three Years of Hard, Secret Work by Two Ohio Brothers Crowned With Success

ACCOMPLISHED WHAT LANGLEY FAILED AT

With Man as Passenger Huge Machine Flew Like Bird Under Perfect Control

BOX KITE PRINCIPLE WITH TWO PROPELLERS

The problem of aerial navigation without the use of a balloon has been solved at last.

Over the sand hills of the North Carolina coast yesterday, near Kitty Hawk, two Ohio men proved that they could soar through the air in a flying machine of their own construction, with the power to steer it and speed it at will.

COTTON TRADE TO DEFEAT COTTON GAMBLING

English Spinners to Meet in Manchester to Discuss Curtailing the Production—International Movement Possible

(By Telegraph to Virginian-Pilot.)
CHARLOTTE, N. C., Dec. 17.

SCARE OF SHORTS ADVANCES COTTON

(By Telegraph to Virginian-Pilot.)
NEW YORK, DEC. 17.

THIRTY MILLION FOR RUNNING RISK

(By Telegraph to Virginian-Pilot.)
NEW YORK, Dec. 17.

COURTESY OF THE VIRGINIAN-PILOT

68 years ago this month...

THIS month we celebrate the 68th anniversary of the first powered flight. On 17 December 1903, Orville and Wilbur Wright succeeded in launching the first aircraft to make successful powered flight. A modest beginning to be sure, but since that historic date, the world has witnessed incredible progress in the development and application of aircraft for both civil and military purposes. The aviation pioneers who contributed their effort, courage and often their lives toward this progress, are legion. Those of us who fly – who *must* fly – owe them a debt of unending gratitude.

In spite of great progress over the last 68 years and the fantastic future developments which we envision, we must remember that aviators are still bound by the same physical laws with which the Wright Brothers contended. Therefore, not only must we continue to give full consideration to the immutable laws of physics, we must also fully recognize the importance of human factors if we are to realize our full potential in this Age of Flight.

Escape Systems: Who Needs Them? Helicopters

By CWO R. F. Williams, USMC

DURING the past 15 years the helicopter, as a military weapon, has come of age. Daily, the helicopter exhibits its capabilities as a combat weapon, as a rescue vehicle and in the less dramatic and often unheralded role as a major logistics resupply vehicle. The mobility, fire power and versatility of the helicopter have changed modern warfare into a highly mobile situation allowing the ground field commander an unparalleled opportunity to engage, block or pursue the enemy at the time most advantageous to his own forces.

The marriage of the jet engine and the rotary-wing resulted in increased performance and vast improvements in lift capability and made possible the flexibility in operation we now enjoy. However, as the helicopter grew in performance it also grew in complexity. Due to this increase in complexity, more versatile missions and increased combat commitments and exposure, the major accident rate for helicopters has also increased. Regardless of cause factors, these accidents have dramatically revealed the vulnerability of helicopter aircrews to major injury and death when involved in crashes. The major accident rate for helicopters now exceeds the rate for fixed-wing aircraft (1.68 helo versus 1.28 jet per 10,000 hours).* When an accident occurs, the fatality rate is also greater in helicopters (1.44 helo versus .88 fixed-wing).

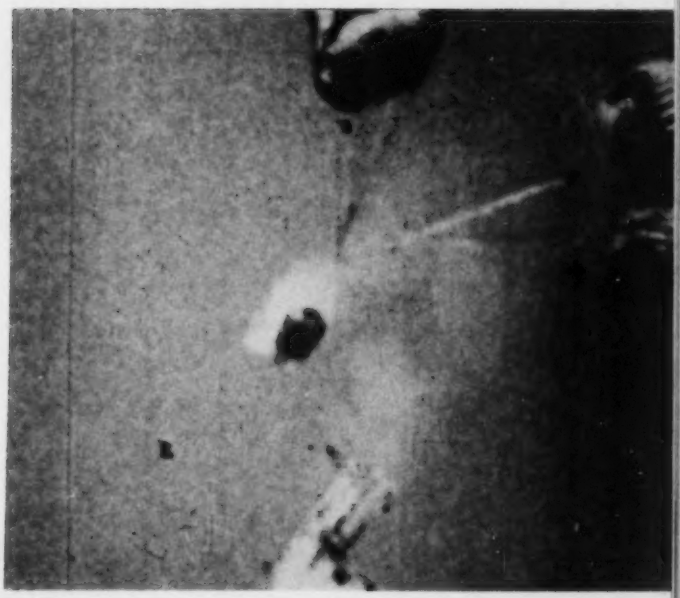
As the helicopter accident rate has increased, so has the concern for loss of life and limb. Inflight emergencies such as fires, loss of control systems, or engine loss at night or during IFR conditions over unknown terrain, as well as hazards resulting from exposure during combat operations, have created a definite need for some type of airborne emergency recovery system for helos. Major commands have

Photo (left) shows initiation of rotor severance charges. Rear seat occupant (above) is pulled clear as rocket for forward seat appears out of smoke.

* Except as noted, all statistics are an average based on FYs 1967-1971.

Do!

illus 26-29



Capsule escape system is separated from aft fuselage (above) as parachutes are propelled outward prior to ballistic spreading (above right).

expressed increasing concern over the high fatality rate associated with helo accidents. Records at the Naval Safety Center document the saving of 2167 lives by means of emergency escape systems in fixed-wing aircraft since the first Navy ejection in 1949. Given these developments, obviously, it was only a matter of time until someone visualized application of the escape system concept to the helicopter.

The very discussion of escape systems for helicopters brings to mind the ejection seat concept and, at this point, most aircrews develop smirks on their faces and exchange knowing glances which say, "They let the monkey out of the closet again." Even the most eager of junior engineers would admit that ejection seats and rotor blades won't mix, and although you can synchronize guns and props, trying it with a pilot's seat and rotors is stretching it a little. Also, no one would fault the premise that downward ejections in a hover would often result in fairly deep impact holes in the ground.

Fortunately, men of vision are seldom daunted by technical difficulties and, at CNO's direction, feasibility tests on helo escape systems were conducted in the early 1960's. This testing resulted in new concepts which included severing the rotor blades and recovery of a cockpit capsule. Further development studies indicated that due to the advent of higher impulse rockets, ballistic deployment and spreading devices for parachutes, both aircrew and passengers could be safely recovered in an encapsulated system throughout all flight ranges. More recent testing has indicated that individual extraction systems are entirely feasible for the smaller helicopters manned by a crew of one or two. Whenever anyone advocates severance of the rotor blades as part of an emergency escape system, the average helo pilot gets rather excited. Whether this is founded on fear of inadvertent actuation of the rotor severance system and a personal desire for longevity, or just a lack of understanding of the proposed systems and its safeguards matters little. What does matter is that at this point most pilots will place their fate in the autorotative feature of helicopters as an adequate means of survival and with considerable justification since countless successful autorotation landings have been made. Airborne helo emergencies, however, do not always end in successful autorotations to a smooth

touchdown.

Accident histories have shown that serious injuries can and do occur to the crew of a helicopter which crashes from even a moderate altitude. Egress difficulties after serious injury, added to the extreme danger from fire, become major obstacles to acceptance of emergency procedures which require the pilot to remain with the disabled aircraft. Other factors which detract from sole reliance on autorotation are:

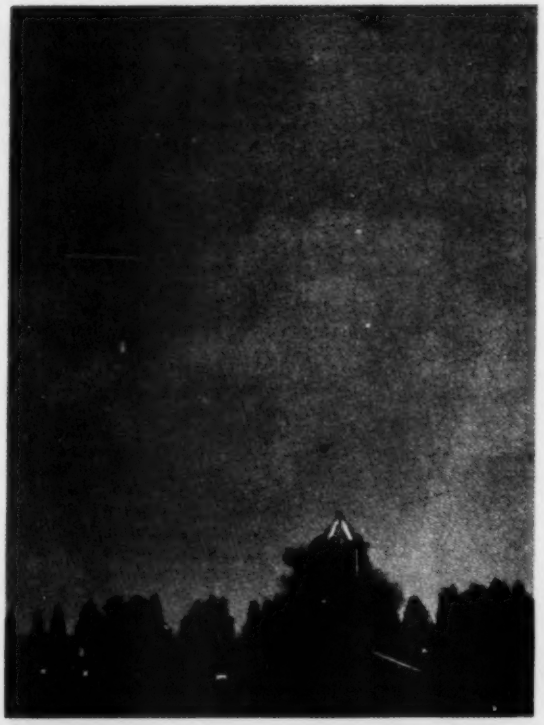
- Requirements for a limited-damaged, fully-functioning control system and main rotor blades.

- Overcoming built-in delay during autorotation transition to avoid altitude/airspeed combinations below which autorotation normally cannot be safely accomplished.

The argument that a similar delay would exist for initiation of an escape system would be valid, except that devices to overcome this type of delay are considered feasible. Also, most combat helicopter pilots would generally agree that improvement in the location and means of carrying aircrew personal survival equipment is in order as well as improved personal flotation equipment for emergencies at sea. All of these problems, and more, have been considered in engineering studies for helicopter escape systems. We should also add that the weight penalties which one might think would accompany such systems may not be as severe as expected.

The ejection seat was developed to ensure that an adequate means of escape would be available to accompany jet aircraft performance. Military philosophy over the past 20 years has been to continue to increase escape system performance to keep up with aircraft development. The helicopter pilot has never had a reasonable chance of bailout under emergency conditions, and autorotation alone cannot be safely assured under all emergency conditions.

Problems associated with development of an adequate emergency escape system in helicopters are of considerable complexity. However, solutions are not beyond the existing state-of-the-art, and it now appears that helicopter performance and the increasing fatality rate are such that full development of an adequate airborne emergency escape system is warranted. Early studies by Naval Air Systems Command concluded that approximately 80 percent of all helicopter fatalities could have been prevented if escape systems had been available and utilized. Hopefully, these studies will provide the needed impetus to proceed from the study and development stage to an operational system. ◄



This sequence of photos shows a zero-zero test extraction from an AH-1 *Cobra*. Photo (top, left) shows rocket ignition and the extraction of the first dummy. In the photo (bottom, left) the second rocket can be seen on the right. In the photos above and right, parachutes deploy and recovery takes place.

Someone at Mama Maria's emporium (old salt type) said today's sailors just aren't the same as they were in the days of iron men and wooden ships. Of course, the speaker was correct. In days of old there weren't any aircraft and there wasn't anyone who had to ride shotgun while a pilot tried to get aboard a bobbing boat on a pitch black night. Those oldsters had it made! All of you "whitehairs" ease your chairs a wee bit closer to the pot-bellied stove while I spin a yarn as to why . . .

Copilots are

WE briefed in the squadron readyroom 90 minutes prior to launch, preflighted our trusty steed and exhaled normally after the slingshot flung our E-2A *Hawkeye* safely into the air with flying speed. As the flight wore on *(most airborne early warning hops wear on the pilots)*, the CAPC *(head honcho)* and I, his copilot, kept a close eye on our Mickey Mouse watches while settling world affairs. We discussed such things as Navy life, who did what and to whom in the last liberty port, the joys of an all-expense-paid trip to the sunny Med on one of the Navy's newest and sleekest motor yachts and anything else we could think of. Our conversation was carried on above the crackle of four UHFs, two HFs, the incomprehensible garble of the Giovanni Road Home Show on the LF and the resonant drone of our two T56 turboprops. After four hours on station, Mickey announced it was time to check in with the nebulous voice of GM *(Gunsmoke Marshall)*.

GM: Roger, Slackjaw. Case III recovery. Marshall 270, angels 18. Expected final bearing 090. Gunsmoke altimeter 29.97. Expected approach time 27; time is now 03. Report established in holding.

Slackjaw: Wilco. *(Later)* Slackjaw 723 established at marshall, angels 18, state 4.8.

GM: Roger, 723, contact CCA button 17, squawk mode 3, zero four commencing.

Ho hum, can't wait to get back to the readyroom for a game of acey-deucey. (At 0400? Why not? We're wide awake and won't have much to do.) We still had time on our hands until it was our turn to push over, so we drove around in little, round-oval-elliptical, precise circles eagerly watching Mickey for the magic moment, two seven. We covered the approach checklist as prescribed by Big Brother NATOPS and the august directives of Granpaw Pettibone, then went on to the possibilities of selecting the incorrect tacan channel (while listening to the usual deriding remarks from the "moles" in back about the bumpy ride being directly related to pilot technique). I said to the CAPC, "Betcha a 'tini ya can't make it to the fix on altitude, on radial, on time. I'll even make it plus or minus five seconds."

Slackjaw: GM this is 723. Pushing over 10 seconds late. (Ha!) State 4.0, squawking and switching to button 17.

A jet penetration (in a hummer?) is somewhat akin to going through mach 1 in a T-34 since our usual configuration is 10 degrees flap and 130 indicated for four hours. (That water comes up *fast* at 4000 feet/minute and 250 knots. You really have to push that "mudda" to get 250.) Level off at 1200 feet (like the manual says). Ten-mile gate, partial dirty. Four-mile gate, full dirty.

GM: 723, report gear, hook and flaps. Say your state.

Slackjaw: Roger, all down. State 3.4.

GM: This is your final controller. Hold you at three miles. Prepare to begin normal rate of descent.

It is right here, now, *at this point* that the stomach muscles start tightening, beads of sweat begin to form, and when you talk, your normal tone is one octave higher. I'm continually amazed by the possibility of getting this thrashing machine on that little bitty airfield

e Alive and Well

Illus 30-32

By LT C. E. Wiedeman

floating down there.

Voice: Rotators off at one mile. (That keeps the LSO happy and precludes unwarranted criticism.)

GM: Hold you at half a mile, call the ball.

Slackjaw: 723, *Hummer*, ball, state 3.2.

GM: Roger, ball.

Hey, buddy, don't go low! A night E-2 flight is generally characterized by all concerned as four hours of boredom preceded and followed by two minutes of stark terror. Well, if you've ever launched or landed (read controlled crash) on a carrier, at night – *a really black night*, where the only visible horizon is that little white line on the VGI on the instrument panel – you're well aware of the meaning of stark terror. Also, it's a well-known rule-of-thumb (remember Saufley Field and their factory for rules-of-thumb?) that only one person at a time can fly an airplane with any degree of success. So, where does that leave the copilot? He sits there dutifully monitoring gages (the altimeter is a good one to start with) and backing up the pilot as they say in the trade – in case he should suddenly be overcome with a seizure of St. Vitus dance at the ramp. About three heart beats and a pucker later I found out what being a copilot was all about.

LSO: Power.

LSO: **POWER!**

The last call, **POWER**, was enough! ROAR went the engines as we went to full cob.

LSO: Bolter.

The CAPC screamed, **"Why'd you advance the power levers? We boltered."**

GM: 723, cleared downwind, report abeam. Say your state.

Slackjaw: Roger. State, *terrified*.

About five minutes later we made an uneventful landing. (Un-event-ful *adj:* gear not folded, air in tires, wings in place, all motion stopped, neck still on shoulders.) An icy silence prevails in the cockpit. Naturally, the next question is would we really have ended up in the spud locker if I had not added full power on both engines? (A much worse result than a bolter.) I don't know. Is the target for a red, pulsating ball really two feet below the rounddown? (How 'bout that LSOs?) I'm not sure that any conclusive tests have been made concerning this question – due to a lack of volunteers for the test work – but it's rather academic anyway. As a naval aviator (E-2 copilot) I'm not overly anxious to have a couple of my buddies snoop through my personal effects (like reading the last six month's worth of Mama's letters) and I'm sure my monthly coffee mess dues would be missed.

There are many multiengine right-seaters still left in the Navy who are beginning or ending their apprenticeships in the copilot's seat. It's an awesome responsibility one assumes when he moves over to the left seat and takes command of a 16-megabuck aircraft with four other crewmen inside. However, that responsibility begins the day you get your first set of DIFOT orders – not the day you get a piece of paper designating you a CAPC, PPC or flight leader. While you're sitting in the right seat it is good headwork (AA, A, BA, U – circle one) to remember not everyone makes

the right decision, every single time, under all circumstances (e.g. the CO!). That's where you as copilot (wingman, RIO, BN, RAN) become a most important person in the aircraft. A lot of people, even our own contemporaries, refer jokingly to right-seaters as "assistant to the autopilot," "starboard side ballast," "nuggets" – with or without adjective, *ad infinitum* and *ad nauseum*. But WE know differently, don't we?

I'm not sure in retrospect, whether or not we'd have made the NAVSAFECEN *Weekly Summary* if I had not advanced the power levers to GO, but I am sure we wouldn't have boltered. The point is, that as copilot, you are in a position of responsibility; you are there for a reason – safety! Each and every naval aviator from jaygee to captain is going to make at least one mistake at some point in his career. It becomes intuitively obvious to the most casual observer that the chance of a mistake ending in a tragedy is only half as great with two people on top of the situation. There is a mnemonic, a device LSOs use, which goes like this: DTTSOBUHITRR (don't trust the SOB until he's in the readyroom). If I've learned nothing else during my last two years in the right seat, it's the fact that we naval aviators, contrary to popular belief, are not infallible. A large segment of the naval aviation community (usually NFOs – but then we just consider the source) popularly believe copilots should sit on their hands during a flight. I'll say it *one more time*; copilots are assigned for a good reason – safety of flight. I'm not suggesting that it's a good idea to grab the yoke and shake vigorously on final approach, or maintain a running commentary on each deficiency in pilot technique (Son, if you do that again I'm gonna beat you smartly about the head and shoulders with my kneeboard.), but any NATOPS deviations or unsafe flight procedures should be pointed out with tact. The copilot (read RIO, RAN, BN, wingman),who sits passively and mutely as the altimeter unwinds to zero or as the plane does a slow roll to the deck is defeating the purpose of his assignment as a crewman (it also may abruptly terminate his flight through space – even his very existence).

Sit up and take notice world. Copilots are alive and well – trying to keep you that way. ◄

We here at APPROACH extend a "well done" to LT Wiedeman for such a well-written, thought-provoking article. This kind of story is what attracts reader interest and conveys, most painlessly, messages relating to the complex subject, most dear to every aviator's heart – AVIATION SAFETY. What I'm trying to say is, this is your magazine, fellows – it's what you make it. Let us have your ideas and experiences for publication. You may never know when you **save** *a fellow aviator, but you'll damn sure know when you kill one as a result of his not being able to hack a situation that you'd previously survived – and kept to yourself! – Ed.*

The Old Hypoxic Passenger Trick

By LCDR K. M. Vaskevitch

IT all happened one black stormy night in an A-3. A recently qualified RAG pilot was returning to NAS West Coast with a veteran enlisted crewman in the second seat and a passenger in the third.

As usual, a series of minor malfunctions and checklist deviations led up to the spectacular finish. The only operable radio was in the third seat. The third seat passenger could not transmit or receive with his oxygen mask, consequently, frequency changes had to be shouted to him over the engine noise. The passenger would set the frequency and indicate the change with a thumbs up. As it happened, the passenger, fumbling in the dark, had attached his oxygen mask to the fourth seat oxygen hose, thus depriving him of the oxygen he had faithfully turned on in the third seat. Finally, he had failed to secure the inner hatch properly, neatly negating the cabin pressurization system. Thus the stage was set for a memorable night.

The pilot leveled off at FL 220, frequency changes were made as briefed, and the flight was proceeding as planned. After 20 minutes the passenger began setting the wrong frequencies in the radio. The first

indication of hypoxia was noticed in his tendency to giggle over his mistakes. Realizing that he might be hypoxic, he donned his oxygen mask and tried unsuccessfully to breathe. His next coherent thought was to recycle all the switches on his third seat oxygen control panel. Having satisfied himself that the oxygen controls were properly set, his befuddled brain drew a nearly fatal conclusion, i.e., if he didn't have any oxygen, the pilot didn't either, and the only way to save the aircraft before everybody passed out was to force it down to a lower altitude.

The pilot, breathing normally and on instruments, was too preoccupied with the weather to realize he had no cabin pressure. He was also irritated because he had not communicated with ARTCC for 15 minutes.

Suddenly, a drunken, berserk figure fell over his right shoulder, grabbing the yoke and pushing it full forward. This brought about a severe negative G situation which pinned the panicked passenger to the overhead. The startled pilot hauled back on the yoke, bringing the "drunk" crashing back down on top of him. The second seat crewman punched wildly at the bewildered passenger in an attempt to force him away from the controls. The blows seemed to revive the passenger who placed one foot on the yoke in another attempt to force the aircraft down. This time the pilot, suffering from a nosebleed and a sprained hand, held the yoke back. A blow from the crewman knocked the passenger's foot free, the yoke snapped back, slamming the passenger into the aisle between the pilot and crewman, where mercifully, he passed out.

The dazed crew, realizing that the passenger must have been hypoxic, descended slowly to 10,000 feet (which was below MCA for that area) where the battered passenger slowly recovered. The aircraft landed without further incident at a nearby AFB, where the passenger was rebriefed and his mask repaired.

It's interesting to note that the passenger remembered nothing from the time he unstrapped to force the aircraft down, to the time he recovered his senses.

The crew involved, resting uneasily in anonymity, can be best recognized by their lengthy, comprehensive passenger briefs, and their untiring dedication to NATOPS checklists. ◄

Cotton Fatigues?

PILOT factor (landing technique) was the cause of strike damage to an F-8H landing aboard ship. Prompt action on the part of the flight deck fire truck and the crash crew prevented the ensuing fire from becoming a conflagration. The aircraft canopy was opened with the external canopy jettison handle and the pilot exited unharmed.

Here's the kicker: the pilot, a fairly senior naval aviator, routinely wears cotton fatigues in lieu of the NATOPS-required standard nomex flight suit. The main fuel cell was ruptured in this accident and spilled jet fuel ignited in the area just forward of the engine. There was also fire in the wheelwell area. There's no use getting "iffy" here but we will say that this pilot (1) is relying heavily on luck and an efficient crash crew and (2) is not setting a good example for younger men by observing NATOPS personal survival equipment requirements.

Beacons Block Radios

A PILOT and copilot on the ground after ejection could not establish contact with aircraft overhead using their AN/PRC-63 survival radio. Both men had failed to secure the automatically activated AN/URT-33 beacons located in their seat pans. The survivors were located by an Air Force F-4 pilot who spotted the pilot's signal mirror and were later rescued by an Air Force helo, the mirror again pinpointing their position.

"Looking back," the pilot states, "one of the things I learned is that your AN/URT-33 beacon should be turned off if you want to have a clear voice channel on your survival radio. I feel all aircrews should be reminded to turn off the seat pan beacons when on the ground. The survival radio is one of the best pieces of survival gear you have if you can utilize it."

Enemy No. 1

"CORRECT action must almost be reaction in many situations, and this can be attained only by diligent training and retraining, reading and rereading, and being prepared for the unexpected. When we do not prepare in this manner we become complacent, and complacency is a dangerous psychological factor. We are not aware of its presence so readily as other problems. The feeling of knowing all you need to know is Enemy No. 1 of the professional, be he pilot, physician, teacher or what have you."

Flight surgeon in MOR

Hook Up?

INVESTIGATION of a recent midair collision disclosed that the pilot of one aircraft did not have his koch parachute fittings connected to his torso harness. In this case the pilot did not initiate ejection and was fatally injured when the aircraft crashed. Had he ejected, the results would have been the same.

There have been four confirmed fatalities as a result of ejecting with the koch parachute fittings disconnected. All four persons would have survived had they been hooked up.

Aircrews are strongly advised that any extra cockpit mobility which may be gained by flying with the parachute risers disconnected is not worth the consequences.

Low Altitude Ejection

"POST-ACCIDENT evidence indicates ejection was at the last possible second or fraction of a second for it to have been successful because of aircraft sink rate and altitude. The pilot states that he never moves the seat pan firing handle down because his height will always allow him to use the face curtain. His overconfidence in one system, or lack of confidence in the other, nearly resulted in disaster. If any unusual forces had delayed his reach for the face curtain or if removing his hands from the stick to grasp the face curtain had caused a sudden attitude change, he would not have survived.

"This pilot is firmly committed to the use of only one ejection method despite the proven experience of others. His attitude is not an isolated instance in the jet aviation community. A multitude of excuses have been given for not considering use of the seat pan procedures, but as proven again and again, disregarding established rules and procedures has yielded an impressive toll of injuries."

Flight surgeon in MOR

Absolute Familiarity

"IF survival-rescue equipment is to be fully utilized, absolute familiarity on the part of the user is a must. In a survival situation many actions should be automatic in

notes from your flight surgeon

nature with little conscious thought process involved. Thus, proper deployment and retrieval of survival gear must come as "second nature" to the individual. This can only be achieved by periodic review of procedures to the point at which they are learned by rote. Proper communications between squadrons and the local SAR units should insure that crewmen are properly briefed on the type of rescue devices/techniques to be expected."

Flight surgeon in MOR

Human Fatigue Failure

THE warm sun beaming through the cockpit window gave CAPT Ken Hackett a pleasant feeling as he leveled off at 5000 feet, VFR on top.

"You got it," he said, leaning back in the seat and folding his arms.

1st LT Chuck Charger, with three flights in model under his belt, took the controls. CAPT Hackett closed his eyes and was soon in the twilight zone. Sound familiar? Mix together one aviator who doesn't get much exercise, who stayed up until 0100 the previous three nights watching TV, 0600 brief, 0700 takeoff and you've just about got a single-piloted aircraft.

CAPT Hackett is "suffering" from fatigue. He looked alert enough to the ODO as he went out to accept the bird, but he's actually like a piece of metal that's about to fail from fatigue. Since he wanted to get back in the chocks early and maybe get a quick snooze at home over the noon hour, he didn't do much of a preflight. But it probably wouldn't have made much difference since he wasn't seeing things too clearly anyway. He treated the checkoff-list similarly, but he had a good copilot who took up the slack. Unfortunately, there wasn't any slack when they heard a loud bang from the No. 1 engine. LT Charger sat there stunned. CAPT Hackett stirred into action by reaching up and ----. Well, since it's fiction you can fill in the blanks. In his condition he had, at most, about a 50-50 chance of diagnosing the problem and making the right decision quickly.

Fatigue is something aviators must respect for its potentially dangerous effect. Most of us probably consider it less of a hazard than flying with a cold and, of course, no one wants to admit that he shouldn't be flying because of lack of sleep, but fatigue is a mindbender. It breeds complacency and dulls alertness. A preflight is treated as mundane, therefore, those hydraulic lines which are rubbing together are never noticed. The checkoff-list is too much trouble to read and the instrument scan turns into a fixation on one or two instruments. Judgment is impaired. Peripheral information is ignored. Pilots do not realize that their performance is slipping. Any situation requiring a fast reaction usually results in overcontrol.

Lack of sleep need not be the sole cause of fatigue. Let a somewhat tired pilot take an allergy-arresting antihistamine, or not get enough salt in his system in hot weather, and he'll feel and act the same as CAPT Hackett. We should realize that the prevention of fatigue lies in good physical conditioning and plenty of rest. We must recognize and admit our fatigue when it exists and not let it lull us into compromising the safety of ourselves and crew.

CAPT W. E. Rea, USMC
MAG-16 "Collective Pitch"

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"POST-ACCIDENT evidence indicates ejection was at the last possible second or fraction of a second for it to have been successful because of aircraft sink rate and altitude. The pilot states that he never moves the seat pan firing handle down because his height will always allow him to use the face curtain. His overconfidence in one system, or lack of confidence in the other, nearly resulted in disaster. If any unusual forces had delayed his reach for the face curtain or if removing his hands from the stick to grasp the face curtain had caused a sudden attitude change, he would not have survived.

"This pilot is firmly committed to the use of only one ejection method despite the proven experience of others. His attitude is not an isolated instance in the jet aviation community. A multitude of excuses have been given for not considering use of the seat pan procedures, but as proven again and again, disregarding established rules and procedures has yielded an impressive toll of injuries."

Flight surgeon in MOR

Absolute Familiarity

"IF survival-rescue equipment is to be fully utilized, absolute familiarity on the part of the user is a must. In a survival situation many actions should be automatic in

notes from your flight surgeon

nature with little conscious thought process involved. Thus, proper deployment and retrieval of survival gear must come as "second nature" to the individual. This can only be achieved by periodic review of procedures to the point at which they are learned by rote. Proper communications between squadrons and the local SAR units should insure that crewmen are properly briefed on the type of rescue devices/techniques to be expected."

Flight surgeon in MOR

Human Fatigue Failure

THE warm sun beaming through the cockpit window gave CAPT Ken Hackett a pleasant feeling as he leveled off at 5000 feet, VFR on top.

"You got it," he said, leaning back in the seat and folding his arms.

1st LT Chuck Charger, with three flights in model under his belt, took the controls. CAPT Hackett closed his eyes and was soon in the twilight zone. Sound familiar? Mix together one aviator who doesn't get much exercise, who stayed up until 0100 the previous three nights watching TV, 0600 brief, 0700 takeoff and you've just about got a single-piloted aircraft.

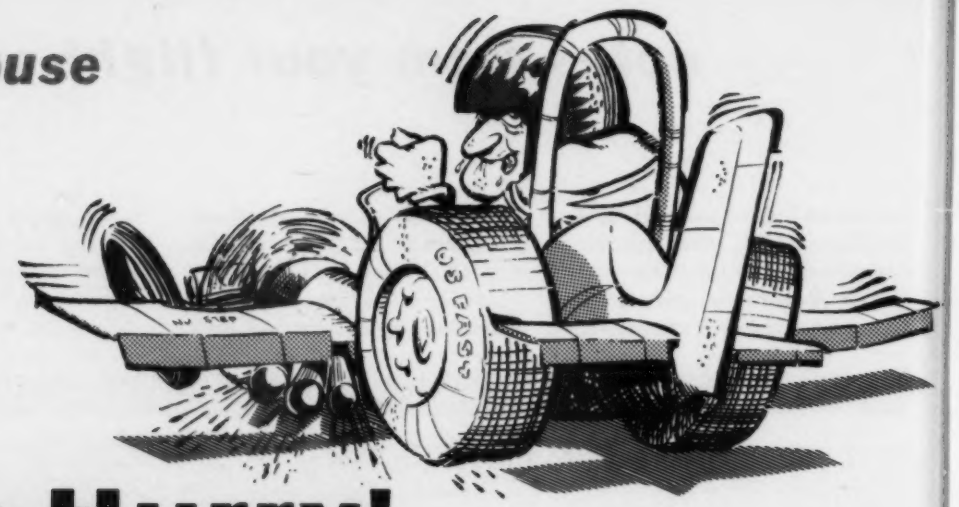
CAPT Hackett is "suffering" from fatigue. He looked alert enough to the ODO as he went out to accept the bird, but he's actually like a piece of metal that's about to fail from fatigue. Since he wanted to get back in the chocks early and maybe get a quick snooze at home over the noon hour, he didn't do much of a preflight. But it probably wouldn't have made much difference since he wasn't seeing things too clearly anyway. He treated the checkoff-list similarly, but he had a good copilot who took up the slack. Unfortunately, there wasn't any slack when they heard a loud bang from the No. 1 engine. LT Charger sat there stunned. CAPT Hackett stirred into action by reaching up and -----. Well, since it's fiction you can fill in the blanks. In his condition he had, at most, about a 50-50 chance of diagnosing the problem and making the right decision quickly.

Fatigue is something aviators must respect for its potentially dangerous effect. Most of us probably consider it less of a hazard than flying with a cold and, of course, no one wants to admit that he shouldn't be flying because of lack of sleep, but fatigue is a mindbender. It breeds complacency and dulls alertness. A preflight is treated as mundane; therefore, those hydraulic lines which are rubbing together are never noticed. The checkoff-list is too much trouble to read and the instrument scan turns into a fixation on one or two instruments. Judgment is impaired. Peripheral information is ignored. Pilots do not realize that their performance is slipping. Any situation requiring a fast reaction usually results in overcontrol.

Lack of sleep need not be the sole cause of fatigue. Let a somewhat tired pilot take an allergy-arresting antihistamine, or not get enough salt in his system in hot weather, and he'll feel and act the same as CAPT Hackett. We should realize that the prevention of fatigue lies in good physical conditioning and plenty of rest. We must recognize and admit our fatigue when it exists and not let it lull us into compromising the safety of ourselves and crew.

CAPT W. E. Rea, USMC
MAG-16 "Collective Pitch"

Anymouse



In a Hurry!

IT WAS on a Monday morning when the plane captain came into the shop and asked me to stand fire bottle watch and block out our C-47 aircraft. We were just heading for the door when we heard one of the aircraft's engines turning over. Racing out to the plane, we found that the pilot (a full commander with many hours in this aircraft) had started No. 2 engine with no external power unit and no fire bottle watch standing guard. The plane captain had no sooner secured the rear entry door when No. 1 engine was suddenly started, still with no fire bottle watch. Then the pilot gave me the pull chocks signal (which I did). As I started to give him the unlock tailwheel signal, he immediately started taxiing out of his spot and headed off down the ramp. Luckily, there were no other aircraft in the immediate vicinity or there could have been an accident, not to mention a fire on one of the engines. When I reported this to the maintenance chief, he replied that he (the pilot) was the plane commander and could do what he wanted. The pilot's eagerness to start his mission and his disregard for turnup regulations could have caused an accident; but, as I said, Lady Luck was on his side. I am writing this in hopes that the pilot will read this and be a little less eager to take off without the proper precautions on his next flight.

Madmouse

Dear Madmouse:

You certainly have reason for that "hot-under-the-collar" feeling. Harebrained stunts such as this, performed by pilots who know better, cause consternation here at the Safety Center too. It's downright discouraging to hear of such flagrant safety violations when so much has been written with regards to aviation ground and flight safety. Even if the pilot couldn't read, you'd think common sense would dictate some consideration for the linemen in the vicinity of his aircraft.

We hope that all of your crew, like you, realize that just because an individual is designated "plane commander," he is **not** *synonomously labeled a* **professional**. *Both titles must be earned, but the latter stands out like a neon sign* – **all the time!**

The purpose of Anymouse (anonymous) Reports is to help prevent or overcome dangerous situations. They are submitted by Naval and Marine Corps aviation personnel who have had hazardous or unsafe aviation experiences. These reports need not be signed. Self-mailing forms for writing Anymouse Reports are available in readyrooms and line shacks. All reports are considered for appropriate action.

REPORT AN INCIDENT, PREVENT AN ACCIDENT

An Alert Avert

THE driver of a tow tractor, while hurrying to respot an aircraft on the flight line, struck a large aircraft boarding ramp as the tractor rounded the corner of a hangar. Not realizing a mishap had occurred, the driver proceeded on without stopping. A plane captain inside the squadron line shack heard the collision and turned to see the ramp moving unattended toward the aft wing flap area of a large transport aircraft parked on the flight line. The plane captain rushed out of the line shack and headed for the boarding ramp. He caught it and applied one of its two parking brakes, and the ramp

stopped less than 10 feet from the aircraft.

Investigation of the incident disclosed that the boarding ramp had been left in an unauthorized location without the wheel brakes being set. It was also found that the wheel brake not used by the plane captain was inoperative. Had the plane captain attempted to stop the ramp with the defective brake, a costly mishap would have been inevitable.

This incident is a classic example of what can happen when a combination of unsafe practices go undetected.

Upsetmouse

How right you are! Only the quick response of a very alert plane captain kept this incident from becoming a costly ground accident. He is to be commended. Had everyone else involved been as alert, we wouldn't have heard from Upsetmouse.

Activities Coordinated

UPON return from a tanking hop, the flight crew of an EKA-3B griped the d.c. trim as being inoperative. A JCN (job control number) was issued to the AE shop to investigate. Before the gripe could be worked off, the aircraft was inducted into ISR (in-service repair) for repair of small skin cracks in the fuselage/tail area. (The work was done by a NARF team in our own spaces.) When this was completed, the AEs changed the stab actuator (located in the tail compartment); the work was inspected and the d.c. trim gripe signed off. The aircraft was then put in an "up" status and readied for a flight that afternoon.

The aircraft was manned and all seemed to go smoothly until the *Skywarrior* was halfway down the runway. As the pilot pulled back on the yoke to rotate, the aircraft failed to respond. Already past the takeoff refusal point, the pilot used trim to get airborne. An uneventful landing followed one hour later with the pilot again using the trim for nose attitude control.

Postflight investigation revealed that the rudder-elevator boost disconnect was disconnected. Apparently, the boost became disconnected during either the ISR or the stab actuator change. The boost is spring-loaded overcenter and only a slight tug on the control cables will disengage it. There is a rudder-elevator boost press-to-test safe light in the cockpit, but neither the flight crew nor the plane captain doing the companionway check tested it. (It is a checklist item.)

The following steps have been taken in this detachment to prevent a recurrence of such a problem:

(1) Make thorough inspections after ISR work by all shops concerned and inspections by QA representatives of safety-of-flight items.

(2) Issue a JCN to Airframes to inspect this system after work has been done in this area by another shop.

(3) Reemphasize the necessity for flight crews to complete checklists.

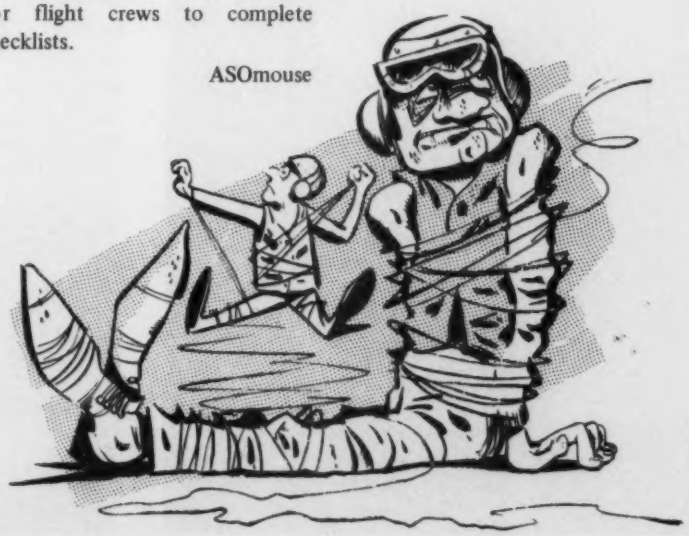
ASOmouse

Stay Clear of the Spud Locker During Aircraft Recoveries

A C-1A landed aboard our ship with 50 feet of trailing wire antenna deployed. The flight deck was cleared of all unnecessary personnel prior to the landing in order to minimize the hazard to personnel. A normal approach and landing was then executed with no problems. After touchdown, the LSO, out of curiosity, proceeded to the fantail to see if any damage had been done by the antenna weight. Upon arrival at the fantail he found that the fantail watch had not been told to clear the area; but worse, he also found about 15 other men on the fantail. It is very fortunate that no one was injured.

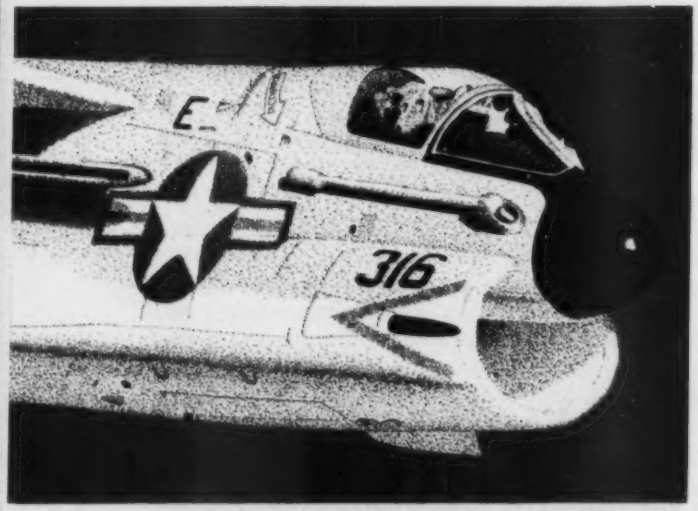
Carriermouse

Although we cannot tell you where it is written down, it has always been our understanding that common sense (and shipboard regulations) require that the fantail be cleared of all unnecessary personnel during all aircraft recoveries. In the case recounted, it is indeed fortunate that no one was injured. ◄



FERRYING AIRCRAFT

By LCDR A. C. Friedman, USN (Ret)



THE July 1971 issue of APPROACH contained a short Anymouse feature entitled, "Acceptance Checks Are Revealing" *(see reprint of article in accompanying box)*. One of our readers, LCDR Arthur C. Friedman, USN (Ret), has written a letter about this article which we believe will be of interest to many readers. Because of its length, this letter is presented here as a separate article, rather than as a part of the regular letters page. LCDR Friedman writes:

"I read with extreme interest and frustration the account of a P-3B ferry flight written by 'Electromouse.' From his account it is readily apparent that the aircraft commander *and* his crew were ill-prepared to perform a ferry mission. From your comment on his account, it is also apparent that you missed the whole point of the exercise.

"Before continuing, let me establish my credentials. I have just completed a tour as a ferry pilot with Aircraft Ferry Squadron THIRTY-TWO. I was qualified in and flew A-4, A-7, F-4, F-8, T-1, T-39, C-47 and C-117 aircraft. During my tour, I delivered 172 aircraft.

"When a ferry pilot is assigned an aircraft to move, it is *his* responsibility to ensure a *safe* and expeditious delivery. He must be his own operations officer, NATOPS officer and maintenance officer. He must be thoroughly conversant with all applicable OPNAV and NAVAIR instructions. And he *must know* his aircraft. It

is obvious that 'Electromouse' and crew were none of these since, by their own account, they accepted an aircraft that was not properly equipped. I assume that these people were NATOPS qualified in type aircraft, yet they allowed maintenance personnel (plane captain? line CPO? maintenance officer?) to refuse proper servicing. OPNAVINST 3710.6F and NAVAIRINST 3700.1 plainly state the ferry pilot's responsibilities and his authority to accept or not accept an aircraft if it does not conform with the applicable directives, *which this one obviously did not*. These instructions also spell out the responsibilities of the transferring activity. It is not a matter of making an issue as Electromouse puts it, in demanding that maintenance personnel comply with NATOPS and maintenance requirements. It is, rather, a matter of facing the issue. It is the fact that you are moving a multimillion dollar piece of equipment and that higher authority has determined what shall and what shall not be done with regards to the ferrying of aircraft. It's all there in black and white.

"The sad part of the whole story is that what Electromouse encountered is not an isolated incident but rather the rule. Most organizations, when transferring an aircraft, will expend as little money and manpower as possible in preparing it for flight. I have encountered almost every kind of dodge and excuse known to man when it comes to getting an airplane properly prepared for a ferry flight. Such reasons, as, 'It's within limits,' 'We always fly it like that,' 'It's the local heat/cold/rain, etc. that causes that . . .,' melt away after a conference with the maintenance officer or the commanding officer and the appropriate maintenance manual, NATOPS manual and OPNAV/NAVAIR instructions. It's amazing how quickly the machine is properly configured and serviced when the transferring activity realizes you know what you're doing, and you know what *they're supposed to do*. I could cite many specific cases but I'd probably get carried away and this letter would turn into a book.

"This brings me to the second point I'd like to make. That is, concerning your comment which I assume is the NAVSAFECEN official reaction. To state that '. . . aircraft transferred between activities are not in the best of condition,' is about on a par with the old saying that 'a midair will tend to spoil your whole day.' I believe I have seen a good cross-section of maintenance from all activities, as I have picked up aircraft from Navy

Acceptance Checks are Revealing

Reprinted from the July 1971 issue

RECENTLY our squadron sent a crew to NAS East to ferry home a P-3B. While inventorying this aircraft I noticed discrepancies such as broken clocks, electronics gear adrift, oxygen bottles overdue for inspection and missing items which were not specifically on the inventory record. It *appeared* that the aircraft had been used as the "spare parts depot" and neglected in many ways. During preflight the main landing gear tires were found to have marginal amounts of rubber remaining. We requested that one tire be changed before departing because a landing was to be made at another base enroute home. Their maintenance personnel inspected the tire and refused to change it – claiming it was "within limits." In order not to make an issue of the matter our pilot accepted the aircraft, and we ferried it home without incident. However after landing back home it was determined that all six tires had to be changed because of excessive wear. I feel that until an aircraft is transferred it should be maintained in the same way as any other aircraft – that is, change what needs changing to keep its status UP. The pilot must always depend on the reliability of the maintenance man for his safety but the maintenance man's reliability is largely dependent on the squadron's sense of responsibility. We don't need an accident to remind us of this!

Electromouse

You are so right! It is unfortunate but true that generally aircraft transferred between activities are not in the best of condition even in newer models like the P-3B. Material and data are being gathered concerning the number of discrepancies occurring in transfer aircraft for an article on this subject in the near future.

and Marine regular and reserve squadrons, NARFs, NAS OMDs, civilian overhaul activities and aircraft factories. With the exception of the factories (where you get a brand-new bird) it begs the imagination to describe the condition of some of these aircraft.

"You then continue on and indicate a study will be made. All well and good, but I'll tell you right now – you've got a problem area that won't quit! Probably the reason it doesn't show up on your computer statistics is that you've got two ferry squadrons with a bunch of old pros who know what they're doing. But that won't cure the problem and neither will a study.

"I know it's easy to criticize so I'll try to be constructive and make a few suggestions:

• Get commanding officers of aviation activities to comply with *existing* directives when preparing an aircraft for ferry. This should be easy enough to do with a word or two from CNO or some other well-placed individual.

• Get commanding officers of aviation activities to shape up their maintenance. This may not be easy to do, as I *do* realize the problems of maintenance (parts, talent, supervision, operational commitments, etc). The problem is also one of attitude. If the skipper wants his aircraft to be in good shape and shows an interest and understanding in maintenance, the maintenance officer will shortly get the word and pretty soon all concerned, right down to the junior airman on the line, will show the same interest with an inevitable improvement in the product. But all too often the CO is more interested in amassing flight time, for obvious reasons, and here again the maintenance officer will shortly get the word, and we end up with a flying piece of junk (e.g., one F-4 I went to pick up from a squadron had major discrepancies in *every* system, except the engine, for as far back as I could ascertain on the yellow sheets).

• Require a *full card* maintenance test flight within five days of ferry flight vice the 30-minute 'test flight within 10 days' – sometimes these 30-minute flights end up as a couple of orbits around homeplate, and the only thing they prove is that the plane will get off the deck and the gear will go up and down.

• For those of you who are not in a ferry squadron but will ferry aircraft, *know at least the following instructions:*

(a) OPNAVINST 3710.6F – Aircraft Ferry Service; Responsibilities and procedures for.

(b) NAVAIRINST 3700.1 – Minimum Operating Requirements for Aircraft to be Ferried.

(c) BUWEPSINST 13090.1 – Aircraft Standard Inventory Logs and Aircraft Inventory Records; Procedures in connection with transfer of naval aircraft.

(d) OPNAVINST 3710.7F – NATOPS General Flight and Operating Instructions Manual.

• Know HOW to read aircraft logs and *read them.*

• Get an ex-ferry pilot on your staff – he knows the problems and can fill you in on all the gory details.

"In closing, let me say that despite all the problems, the flying was great and I loved every minute of it (well, almost every minute)."

Yours for safer flight operations,

LCDR Arthur C. Friedman, USN (Ret)

• Whether the crew was "ill-prepared" to move the P-3B cannot be judged by the fact that they did not make an issue out of a tire change request. I feel sure that if there was any real doubt in the pilot's mind, he wouldn't have left the chocks until that tire was changed. In the end, the pilot and crew did insure a safe delivery, although aircraft transfer was not their normal mission.

The point here is, that just knowing, and quoting instructions, and raising hell with a transferring activity does not guarantee a safe, expeditious delivery. What does, however, is knowing *what to look for* and *what not to accept*. Here again, as you imply, a professional attitude and a knowledge of the aircraft and applicable NATOPS will keep you out of a bind.

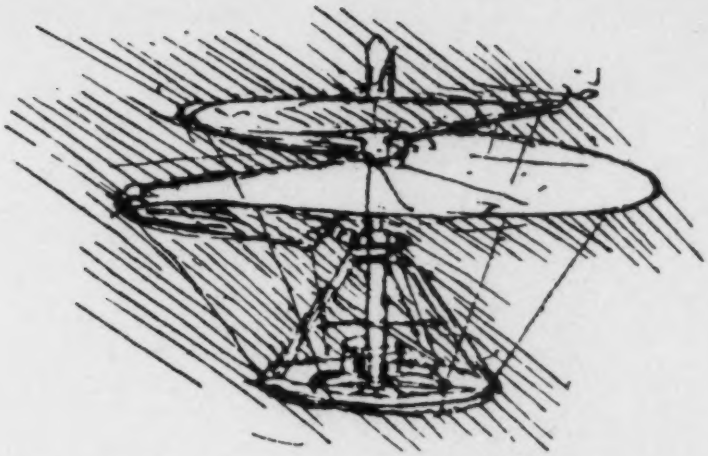
I'll be the first to recommend that all pilots transferring aircraft be familiar with the instructions you quoted, but at the same time, having transferred aircraft myself, I'll also recognize the difficulty Fleet pilots experience in staying conversant with such directives.

Activities ferrying aircraft, whether VRF or otherwise, have a phenomenal safety record. This, in itself, speaks for the professionalism, and oft times the discretion, employed by naval aviators.

Thanks for sharing your hard earned experience, Art. You've offered some good suggestions toward solving the problem. – Ed. ◄

The new pilot's enemy is inexperience and the experienced pilot's enemy is COMPLACENCY.

Ace L



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We have taken for granted that many of these turbines are rugged, reliable, and will operate trouble-free for thousands of hours. However, like any motor, they cannot be abused and still be expected to put out 100 percent. In order to give some good rule-of-thumb tips the following Turbine 10 Commandments are listed:

The Turbine's 10 Commandments

By George S. Gropp
Supervisor of Field Services
Aviation Power Supply, Inc.

1 – Thou shalt not actuate thy starter without first verifying that thy twist grip is in full cutoff position, lest thou melteth thy first stage turbine wheel.
2 – Thou shalt not roll thy twist grip to the lightoff position without ample oil pressure, lest thou condemn thy No. 8 bearing to eternal fire and overtemperature.
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Courtesy *Rotor & Wing*, August 1971

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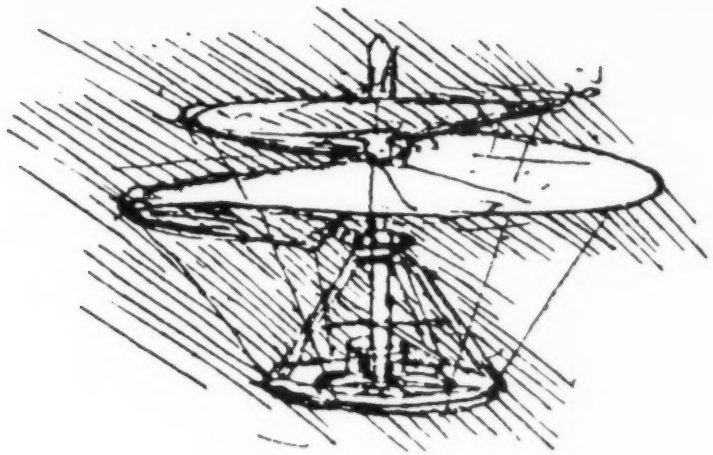

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Courtesy *Rotor & Wing*, August 1971

What are your limits?

WHEN pilots are not in a shooting environment or not involved in an actual SAR effort, in other words, when operational necessity does not dictate *go-right-now*, it behooves them to pay particular attention to the briefing given by the friendly aerologist. In the first place, OPNAVINST 3710.7F, NATOPS General Flight and Operating Instructions Manual, requires such attention (see pertinent portions in the box). Secondly, even if it wasn't mandatory, it's kind of nice to know a wee bit more than the "bear what lies over the mountain." Finally, how else will you know whether to take along a short-sleeve sport shirt or a parka?

After so many have operated so long over Vietnam where conditions are *go* except in the most extreme weather (and even then A-6s operate almost routinely), the time to regroup is long past due. That means, outside the combat zone, let's put a premium on safety of operations at the expense of convenience. Very few pilots enjoy diverting to an alternate, or delaying a departure, or worst of all canceling a flight when all suited up. Therefore, this might be a good time for introspection and an honest, personal reevaluation. Sure it's legal for a green cardholder to take it rolling under any conditions (unless the CO has closed the field, then if he goes he's in a "heap of trubs"), but there should be some reason other than mere convenience. There is a matter of risk and the three predominant weather conditions generally detrimental to flight – fog, thunderstorms and icing – which, incidently, usually figure high on the list of "contributing factors."

In the big storehouse of data in NAVSAFECEN's computers there is an example (usually more than one) of just about every kind of peculiar flight that has ever been flown. An example to illustrate the theme of this article is no exception. The correct button was pushed, and out popped a real life story, and of all things, a helicopter incident. However, don't you fixed-wingers stop reading! It could just as easily have been a jet or a turboprop of any other kind of aircraft. The HAC of an H-46 filed an IFR flight plan from NAS Smog to NAS Fog with an intermediate stop at Midpoint AFB for fuel. The first leg was uneventful. After landing and refueling, the pilots whirled away toward their *planned* destination – but didn't make it. To make a short story long the pilot climbed to an assigned altitude of 6000 feet, on account of some large, rock-strewn, scrubby-treed hills. (Flashback – before departing Smog for Fog the friendly aerologist had briefed the pilots that the freezing level at Smog was 12 "thou" lowering to 4 "thou" at Fog and that the base of the clouds varied between 2000 and 2500 feet all the way. PIREPS included many reports of icing in clouds.) After cruising along for half an hour, Center rerouted the helicopter and directed the pilot to climb to 8000 feet. Noticing the OAT at 5°C, the HAC energized the anti-ice equipment. The OAT soon dropped to -2°C and ice was seen forming, but quickly dissipating, on the windshield wiper arms. Next, the pilot observed the TIT rising from 640°C to 660°C, as did the pucker factor. He contacted Center and requested a lower altitude but was denied, "because of lower traffic," until he passed an intersection about 25 miles ahead. He decided he could wait because, while talking to Center, the TIT returned to normal and the ice disappeared. Then, just when he thought he might luck out after all – *wham* – in less time than it takes to write about it, he flew into turbulence, got an instant big buildup of ice on the windshield, felt the adrenalin begin to flow and became drymouthed as he watched No. 2 engine TIT soar to 750°C and No. 1 engine fluctuate between ground idle and military power. Unable to maintain altitude, his big round eyes watched the vertical speed needle go from plus 500 fpm to minus 1000 fpm. He passed his plight to Center – like, EMERGENCY – and was immediately cleared to descend to 5500 feet MEA for that part of his route. The HAC, however, could not regain full control until he reached 4500 feet, at which time all ice had dissipated. The aircraft was suddenly clear of turbulence and both engines were once again operating normally. Center advised the pilot, who was still on the gages, that the highest terrain in his immediate vicinity was 3500 feet. Subsequently, the helo was cleared for a tacan approach to Valley airport and broke out of the clouds a

couple of miles before reaching the airport. Continuing under visual conditions the aircraft was landed without further trouble. Both pilots and the crew chief were soon able to stop shaking – after a hot shower and a stiff drink. They quit cross-country flying for the remainder of that day.

Question. Why is it that pilots *seldom* learn from the hairy/tragic/close calls of others? Every year there are mishaps because someone went charging through an area of known icing or boomed through a thunderstorm or tried an approach to a fog-shrouded airport – needlessly. If you have an answer, even if it won't hold up in court, call us or write quickly. Unfortunately, there will be one or more tragic accidents this winter because a pilot flew into a *known* thunderstorm (sure, there are thunderstorms during the winter), *predicted* fog or *reported* icing conditions.

Reminder. This article is not addressing *inadvertent* entry into the conditions enumerated nor flights of operational necessity. Obviously, such flights are on a basis of when you have to go, you go. Rather, it's intended to cover training flights, cross-country flights, routine proficiency flights or administrative flights. You know, like pressing on to get those annual minimum flight time requirements.

Personal Minimums

Among avid golfers who live in areas where it is possible to play year 'round, a tolerance level develops. Some golfers (young'uns) will play regardless of temperature, wind or precipitation as long as there isn't any snow on the ground. Others (middlers) will play only if the temperature stays in the forties and if the wind and light precip remain light. Still others (oldsters) won't play unless the temperature is in the high forties or low fifties, windless with no precip. Maybe pilots could benefit from the same principle when planning flights of other than operational necessity.

What are your limits? It's perfectly legal to file flights into marginal conditions, but one's individual capabilities and the aircraft equipment may not permit a *safe* flight. Perhaps you fit into the category that prescribes 500/2 as your minimum; even though someone else who flies almost every day can hack 200/1 easily. On the other hand, you might be a 200/1 pilot, but your aircraft has no redundancy of radio aids or communication gear. It may have limited anti-icing or no deicing equipment. Undoubtedly in the latter case your minimums should go way up – like VFR conditions only. Let us illustrate. A pilot, whose total time amounted to about 14 months in the air, was interviewed when he reported for duty at an NAS operations job. He had flown over most of the globe in single-engine and multiengine aircraft, at one time or another, in all kinds of weather. He said he always allowed himself an extra margin. When pressed to amplify margin, he said it began with his flight planning. He allowed plenty of time to change his route for safety and a more comfortable flight, if necessary, and still make his scheduled departure time. He further opined that it was his custom to file only to a destination that was forecast to be above minimums, and if he had to transit areas of scattered thunderstorms, he wore out the mike getting all the information he could from Centers and flight service stations along the way to avoid them. Few will disagree that he was an astute pilot with a professional approach to flying.

Squadron Pilots

In the story recounted about the H-46, the pilots were not proficiency pilots. They were old hands in their squadron, supposedly well qualified and experienced, yet, there appeared to be an intolerable degree of complacency and an evident disregard of existing weather conditions. The fly in the ointment was, *exceeding personal capabilities in an aircraft with limited anti-icing and no deicing equipment*. It doesn't make sense does it? If a generalization can be made it would go something like this – when a pilot is about to launch on a type of flight which is normally not customary, into weather conditions in which he normally does not operate, and for which there is no operational necessity, he should exercise an additional degree of care in planning and if any doubt exists about the safety of the flight, do not go. NATOPS lays it on the line, most squadron SOPs spell it out, and that little thing called *common sense* should demand it. ◀

OPNAVINST 3710.7F

Para 231 Pilot in Command. The pilot in command is responsible for the safe and orderly conduct of the flight and the well-being of the crew when one is assigned . . . the responsibility for starting or continuing a naval flight with respect to weather or any other condition affecting the safety of the flight rests with the pilot in command of the flight.

Para 321 Preflight Planning. Before commencing a flight, the pilot in command shall familiarize himself with all available information appropriate to the intended operation. This information should include, but is not limited to, available weather reports and forecasts . . .

Para 325b Weather Criteria for Filing IFR Flight Plans. Flights shall be planned to circumvent areas of forecast atmospheric icing and thunderstorm conditions whenever practicable.

The flight leader survived the collision although his aircraft disintegrated in midair.

As Deadly as the Real Thing

IT was early Sunday morning when four A-4L pilots – Weekend Warriors – began the brief for a road reconnaissance hop. Three of the four pilots (including the flight leader) were substituting for pilots originally scheduled. Nevertheless, all members of the flight were apparently well prepared. Moreover, the new flight leader gave a thorough brief covering all points which seemed appropriate for the road recce.

Shortly after takeoff, the second section leader's radio failed. As briefed, he passed the section lead to his wingman. The flight then proceeded more or less normally until the four *Skyhawks* reached the road recce reversal point. At that time the flight leader passed the lead to the second section.

A few minutes after this lead change, it was determined that little was being accomplished on the

road recce flight because limited visibility (due to haze) forced the flight to maintain a higher altitude than was practical. Therefore, the road recce was terminated and the flight headed back to home base.

Approaching the local area, the pilot leading the flight asked the original flight leader if he wanted to "make a few turns." Because of the fuel load and a base regulation restricting aircraft from making touch-and-go landings during church services (which were then going on), the flight leader accepted the suggestion and the flight proceeded to an area northwest of the field.

During the climb, the two sections began a gradual separation and at about FL 220, turned toward each other in preparation for offensive/defensive tactics. Shortly thereafter, the leaders of the two sections collided. The original flight leader survived the collision although his aircraft virtually disintegrated in midair. He successfully ejected and was later rescued, uninjured. The other pilot's aircraft also disintegrated at impact – but there was no ejection.

During the subsequent investigation it was determined that during the climb which preceded the collision, the two sections had gradually separated. At about FL 220 the two sections turned toward one another at what the wingman in the second section felt was an excessively wide position. This wingman also felt that his section leader had made a level turn and stayed high while the other section (led by the original flight leader) went low. Following this turn-in, the second section leader dropped his right wing, then his left wing, several times as if he were trying to keep the lower section in sight under his nose. Apparently, at some time during this turn he lost sight of the other section.

Meanwhile, the original flight leader's section was closing the other section. He had them in sight and recognized that the turns which the two sections were making would lead to a crossing situation. Feeling uneasy, he decided to concentrate on evasive action, rather than tactics, and allow the other section to pass over him. Both wingmen, however, recalled that the original flight leader actually initiated a pullup, and was in a climb at the moment of collision. In retrospect, it appears likely that the second section leader lost sight of the other section early in the turn. It appears that the original flight leader did have the other section in sight until just prior to the collision when he initiated unsuccessful evasive action by a sharp pullup. Whether the other section leader was also taking positive evasive action at the moment of collision is uncertain but is considered unlikely.

During the investigation it was determined that the squadron flight schedule did not designate the formation flight leader or the chain of command in the event of an abort by the designated flight leader, as is required by paragraph 300b of General NATOPS Manual (OPNAVINST 3710.7E). However, the *original flight leader* was substituted on the flight schedule in place of the squadron commanding officer who was originally scheduled. Furthermore, it was he who briefed the flight for the road reconnaissance. It must, therefore, be assumed that he was the flight leader. Nevertheless, the investigation revealed that considerable confusion existed at the time of the accident and later – because of the lead change in flight – as to who the flight leader was. This confusion is unwarranted because paragraph 231 of General NATOPS states that, "The authority and responsibility of the pilot in command shall not be transferred during flight." Thus, despite who had "the lead," *the original flight leader* retained responsibility as flight leader.

The events leading up to this accident involved a number of violations of the General NATOPS Manual, i.e.:

(1) The flight participated in unscheduled simulated combat without prior briefing, in violation of paragraph 436b(1).

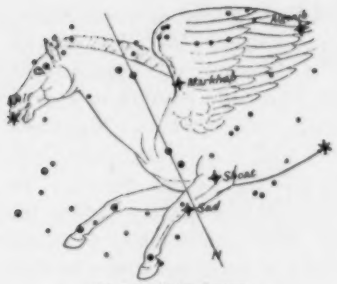
(2) All members of the flight did not have operative transceivers, in violation of paragraph 436b(4).

(3) The ACM (air combat maneuvering) was not conducted in a designated warning/restricted area, an appropriate block of controlled airspace as assigned by ATC, or another designated area where a measure of control could have been maintained (in violation of paragraph 436b[5]).

Concerning the prevention of accidents of this nature in the future, an endorser to the AAR noted: "Squadron/Air Wing doctrine should be drafted/modified to make explicit that, during ACM maneuvers, section leaders *must* keep each other in sight. If at any time, particularly during a converging situation, the opposing section or flight leader is lost, the pilot losing sight shall transmit the fact and cease maneuvering. The other pilot, if he has the blind section/pilot in sight shall give directions (e.g., 'I'm at your four o'clock, low; keep it turning'); or if he too has lost sight, he will call his intentions (e.g., 'I'm taking it high, you go low')."

This same endorser also commented:

"Air combat maneuvering has its proper place in the training syllabus of all tactical jet squadrons. Tragic accidents such as this bring to light that ACM can be extremely dangerous, not only to the participants, but possibly to innocent bystanders on the ground and in the air. The basic guidelines of General NATOPS are only the beginning and must be supplemented by local directives to ensure maximum safety." ◄



The Constellation Pegasus.

LETTERS

The greatest remedy for anger is delay.

Seneca

Lap Belt Retention System

FPO, New York – The article "Spinout" in the July 1971 APPROACH passed over a key point very lightly. The sentence, "Due to the G-loading, the pilot was thrown to the top left side of the canopy and was unable to see the angle-of-attack indicator from this point on," brings a few questions to mind which should be considered. (a.) What else was the pilot unable to see? (b.) Is the lap belt retention system used by the spin expert at the Naval Air Test Center, Patuxent River the same as that used by fleet pilots and RIO's? (c.) Do the Blues use the same lap belt retention system found in fleet F-4s? (Get the idea?)

I agree wholeheartedly with the last two paragraphs and the CO's comments, but feel that our present lap belt retention system was the reason that "this incident came within five seconds of being an accident." I suggest that the non-believer strap on an F-4 and do a bit of ACM without retightening his lap belt and then try taking the airplane to its 3G negative limit.

This causes one to wonder. In just how many F-4 accidents and incidents has the lap belt retention system been a "contributing" factor? Could a question of design deficiency be raised? We have lived with this problem so long that everyone thinks it's normal – and in a fighter aircraft, no less.

LT Ray R. Dickson, USN
ASO, VF-32

• The basic problem seems to be a combination of people and design. A good example of this is the typical parachute jumper. Enroute to the jump area he will have his harness loose for comfort. However, final preparation for the jump includes cinching up the straps to the point of discomfort. This same trait carries over to aircrewmen flying ejection seat aircraft. Many are willing to take a calculated risk by assuming they will have time to cinch up if forced to eject. Consequently, they normally fly "comfortably" with less-than-adequate restraint against forces generated by "unscheduled maneuvers." This is further aggravated by the "one-size-larger" syndrome in the pursuit of torso harness comfort.

On the other hand, design of restraint systems in most cases is weak in the negative G area. As far as we know, only the *Harrier* incorporates a negative G strap to counter this deficiency. This may or may not provide the full answer.

For the present, the best thing to do is wear a properly fitted torso harness and *cinch up.*

Positive Control Procedures

East Coast – I think your magazine is one of the best safety magazines put out. It has information useful to anyone connected with military aviation today. Its wide dissemination makes a wide cross-section of people aware of specific safety problems which occur in the course of normal and emergency operations.

Since 15 August 1971 much of the military traffic on the whole East Coast and other high traffic areas has been under instrument flight rules. No longer is it possible for high speed jet aircraft to file VFR point-to-point. Also many training exercises are now being conducted as much as possible under IFR.

With this sudden increase in IFR traffic the radar controllers are busier than ever and it is imperative that pilots carefully follow lost-communications and missed approach procedures. Also they must be thoroughly familiar with IFR filing procedures.

Pilots who meticulously follow prescribed procedures will aid the controllers immeasurably and lead to a safer operation. Perhaps in the next issue of APPROACH you could run a brief review of these procedures. It would be much appreciated.

An Air Controller

• Your letter was well timed in that the lead article of this issue deals with air traffic control. Let's hope it will be instrumental in motivating all pilots to give more attention to IFR procedures.

Coast Guard Rescue Basket

San Diego, Calif. – The article titled "Homemade Baby Carriage" in the "Notes from Your Flight Surgeon" section of the June 1971 APPROACH, in my opinion, dealt very unfairly with an excellent rescue device. The Coast Guard's rescue basket is not a new piece of rescue equipment. It has been in service for at least 10 years and has been used to successfully rescue thousands of persons from the water. The basket is designed for use by untrained civilians. The average naval aviator or aircrewman has no problem using the Coast Guard rescue basket.

The tone of the article, though intended to be informative, was

APPROACH welcomes letters from its readers. All letters should be signed though names will be withheld on request.

Address: APPROACH Editor, Naval Safety Center, NAS Norfolk, Va. 23511. Views expressed are those of the writers and do not imply endorsement by the Naval Safety Center.

definitely negative and presented a distorted picture of a rescue device which is safe, efficient and simple to use. The picture is projected of two downed aviators, struggling in the water with an octopus-like rescue device and being rescued only after a long struggle during which serious injury was narrowly avoided. When this rescue, in particular, and the record of the Coast Guard rescue basket, in general, are looked at a little more closely, a somewhat different picture emerges.

First, the record of the use of the rescue basket at this unit: Your article prompted a check of the recent rescues made of Navy aircrews by this unit. Since March 1969, Coast Guard Air Station, San Diego has rescued 20 Navy pilots and aircrewmen from the waters off San Diego. Eleven rescues were made using the rescue basket and nine rescues were made using the rescue platform. Eighteen of the survivors indicated that they had no problems with the Coast Guard's rescue equipment even though in most cases they had never seen it before. The two survivors who indicated they did have problems were the F-4 pilot and RIO who prompted your "Homemade Baby Carriage" article.

When you look at the total picture of the rescue of this F-4 pilot and RIO who had problems with the rescue basket, you can better understand why they had problems. The rescue basket worked fine but the rescuer and the rescuee did not perform properly. Within 10 minutes after the *Phantom* drivers hit the water, a Coast Guard helicopter arrived on scene and lowered them a rescue device which they had never seen before. The SAR aircrewman, instead of lowering the basket close by the survivor, allowed the metal basket to strike the survivor on the head. The actual pickup of the pilot and RIO took approximately four minutes and they were safely on deck at NAS Miramar 30 minutes after their Mayday call. The rescue was, in fact, quick and efficient and accomplished without injury to the survivors. The problems encountered were caused, in my opinion, by the error of the SAR aircrewman in allowing the basket to strike the head of one of the survivors and the mental state of the survivors. The actual problems encountered in this rescue were blown somewhat out of proportion in your article.

Need Anymouse Forms?

Here at the Safety Center we receive numerous letters, suggestions, requests and complaints written on plain stationery – with some bearing costly postage stamps! – If there are no postage-free Anymouse forms available within your air wing – squadron – detachment or shipboard spaces, drop us a line here at the Center. We'll be glad to forward you a supply of forms immediately.

As a comparison, in January 1970, five Navy helicopter crewmen were rescued off San Diego by a Coast Guard helicopter using the rescue basket. The crew had been in the water for several hours and three survivors were partially incapacitated by cold and exposure. All five were quickly rescued without difficulty.

The success that the Coast Guard Air Station in San Diego has had with the rescue basket reflects the servicewide success which the Coast Guard has enjoyed with this excellent rescue device. It works and it works well. With very few exceptions, no training is required on the part of the survivor for the rescue basket to work flawlessly.

For your information I have enclosed a copy of the Sikorsky film, "Sea Spray and Saving Lives," an excellent nine-minute movie which gives a demonstration of the Coast Guard rescue basket and rescue platform in actual use.

LCDR P. R. Lewis, USCG
Coast Guard Air Station

● The purpose of the item under discussion was to familiarize naval aviation personnel with the Coast Guard rescue basket. Local Coast Guard people kindly provided data on measurements, construction and use. As for the rescued pilot, you have to admit almost anyone might make prejudicial statements about a rescue device which, first off, was dropped on his head! Whatever his mental or emotional state may have been at the time, it was surely aggravated by such an unexpected rap. We plead not guilty to negativism and distortion and we extend our continuing admiration and appreciation to the Coast Guard for its fine rescue work. ◄

Vol. 17 **approach** No. 6

RADM W. S. Nelson
Commander, Naval Safety Center

Our product is safety, our process is education and our profit is measured in the preservation of lives and equipment and increased mission readiness.

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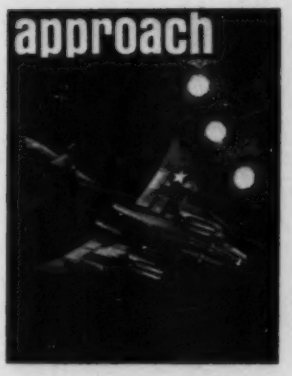
Credits

Expressing the vigilance maintained by naval aviators this holiday season, R. G. Smith's cover painting provides a dramatic moment with attention focused on the new A-4M. Courtesy McDonnell-Douglas. **Pg 26-29** Photos courtesy Naval Weapons Laboratory, Dahlgren, Va. **Pg 24-26** Reproduction courtesy Norfolk Newspapers, Inc.



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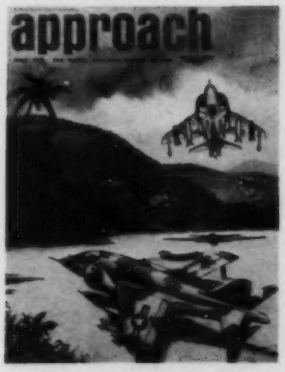

the staff of APPROACH condenses it into concise, easy to read articles calculated to interest and inform you. This is our pledge and we make it good once a month *every* month of the year.